Exploring the Utility of a Simple Model of Writing

A thesis submitted in partial fulfilment of the requirements for the degree of Professional Doctorate in Applied Educational and Child Psychology

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Abstract

Are speaking and writing very much alike, or significantly different, and how do spoken language skills relate to writing? These are important questions, with implications in both theoretical and practical domains. However, notwithstanding a modest, but growing body of research, the nature of the relationship between spoken and written language continues to remain somewhat opaque at this point in time. The aim of this thesis was to explore the relationship between spoken and written language in a group of Year 5 children (aged 9 -10) within two UK primary schools.

The investigation was framed by an alternative construction of a Simple Model of Writing closely mirroring the structure of the model used to represent the Simple View of Reading (SVR). In the proposed model, variability in written language skills is seen to be substantially predicted by spoken language and transcription skills. Seventy-four Year five students, aged nine to ten, attending two primary schools in the South of England kindly provided samples of their spoken language, written language, and transcription skills (spelling and handwriting). The data was analysed using a range of statistical measures designed to identify relationships between variables, with a primary focus on the relationship between spoken and written language.

Analysis of the data confirmed the theoretical premise of the model, but suggested that, at this point in their education, spelling had a greater effect than spoken language skills on writing quality.

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Chapter 1

Introduction and overview of the thesis

1.1 Key Issues

"*Thought is not merely expressed in words; it comes into existence through them"* (Vygotsky, 1964. p.215).

The reciprocal relationship between the expression and development of thought also operates through the medium of writing and is encompassed in the commonly used axiom 'How do I know what I think until I write it down?' (cited in McCutchen, 1984, p.231). Notwithstanding the role of spoken and written forms of expression in terms of both expressing and shaping thought, the nature of the relationship between the two remains somewhat opaque. Do they differ to a large degree, or just at the phoneme (producing sounds), versus grapheme (writing letters) level? Does one influence the other and does the nature of the relationship change over time? These issues, and others related to the relationship between speaking and writing are complex and can be addressed on several levels including the philosophical, theoretical and empirical. This thesis attempts to contribute to the debate by empirically exploring the potential usefulness of a simplified theoretical model depicting one potential configuration of factors mediating the relationship between speaking and writing. It may be that such simplification may lead to clarity regarding the understanding and teaching of expressive language skills on the part of teachers. However, the pragmatic usefulness of such simplified model needs to be balanced against

the need for accuracy and adequacy. These issues will be covered over the course of the thesis (chapters 3 & 8).

1.2 The importance of expressive language skills

Both spoken and written language skills are vital to learning and to success in modern literate societies. They are central to learning in school and they exert a significant influence on the development of a person's literacy skills and subsequent career and broader life outcomes. They are essential skills which allow people to participate fully in society and to contribute to the economy (DfE, 2012; Kim, Al Otaiba, & Wanzek, 2015; Clark, 2012). The National Literacy Trust (Impact Report 2011/2012) reports that:

"Without good reading, writing and communication skills a child won't be able to succeed at school and as a young adult they will be locked out of the job market. They will be unable to reach their full potential or make a valuable contribution to the economic and cultural life of our nation. Their poor literacy skills will also affect them as parents as they will struggle to support their child's learning and generations of families will be locked in poverty and social exclusion." (p.3)

Poorly developed language and literacy skills can also have a significant impact on a person's behaviour, social skills and mental health (Lindsay & Dockrell, 2012; Lindsay, Dockrell, & Strand, 2007; Van Daal, Verhoeven, & Van Balkom, 2007). Based on those individuals or groups identified as having 'language difficulties' the estimate for co-occurrence of language and behavioural

difficulties typically ranges between 50% and 70% depending on the defining criteria used (St. Clair, Pickles, Durkin, & Conti-Ramsden, 2011). There is evidence that the association between language skills and behaviour difficulties persists over time (Lindsay, Dockrell, & Strand, 2007) and that children with language difficulties are at greater risk of developing psychiatric disorders. Baker & Cantwell, (1987) tracked the progress of a group of children who had diagnosed language difficulties from the age of 5 up until 9+. They found that a quarter of the children assessed at 9+ had received psychiatric diagnoses despite showing no signs at the time of the baseline assessment. Expressive language problems can be a particularly significant risk factor for boys (Ripley, & Yuill, 2005). However, unless children have an expressive language problem that affects speech intelligibility, which may impact on their progress with literacy development (Bishop & Adams, 1990), their expressive language difficulties can often go unrecognised.

The mechanisms and processes whereby language difficulties link to behaviour difficulties tend to fall into two broad models. On one level, the behaviour is seen as a form of ‘frustration response’, for example, “I know it, but I don’t know how to say it” or, “I don’t understand it and I’m aware I don’t understand it” (Lindsay, & Dockrell, 2012). The resultant agitated or non-compliant behaviours are responded to as behaviour problems. The other element relates to the use of internalised language in self-regulation of behaviour. For Vygotsgy (1964) the crucial skill for the self-regulation of behaviour is language. As children develop their language they are increasingly able to use ‘self-speech’ as a

mechanism for understanding situations and self-regulation of behaviour (Berk & Winsler, 1995, cited in Ripley & Yuill, 2005).

Though anecdotal in nature, this chimes with the author's experience, with over thirty years of either directly teaching children labelled as having behaviour problems, or working as an educational psychologist. Weak, often unrecognised, expressive language skills are often key factors contributing to problematic situations, with written expression playing a key part in many situations. When exploring specific triggers for episodes of challenging behaviour the author has found that the expectation to engage in a writing task features very frequently. The motivation underpinning the refusal to engage with such tasks is often ascribed to a desire to challenge the authority of the teacher and responded to as such via the individual teacher's or school's system of behavioural correction. Such expressive language difficulties are easier to disguise or hide from view within the domain of spoken language exchanges. However, if a child has a difficulty with expressive language, particularly written expression, then the act of writing will bring this into focus, both in respect of teachers and of peers. Thus writing, as a concrete form of expressive language, plays a crucial part in the chain of precipitating factors linking language difficulties with secondary behaviours that can act as barriers to social participation, academic progress and mental health.

The potential impact of poorly developed spoken and written language skills is particularly concerning at a time when national statistics in England reflect a continuing problem with levels of literacy attainment. For example, the interim

results from the 2016 Key Stage 2 National Curriculum assessments for 11 year olds published by the Department for Education (DfE) reported that 34% of pupils failed to meet the expected standard in reading (as measured by the set test), with 28% failing to meet the expected standard in writing (as measured by teacher assessment). This continuing concern regarding the quality of children's writing skills has led to the development of a number of intervention programmes designed to improve writing skills.

1.3 Attempts to improve written language skills

Evidence of the effectiveness of such programmes has so far been varied. The initial review of Every Child a Writer for example reported that '*Statistical analysis of pupils' attainment data showed that the rate of progress in writing in ECaW schools was no greater than that in comparison schools.'(Fisher & Twist, 2011. p.9)*

The impact evaluation of the 'Talk for Writing' programme (Dockrell, Marshall, & Wyse, 2015) reported that; *"after one year there were some small differences between intervention and comparison school pupils' attainment on writing tests. Where there was evidence of change in the writing measures sometimes this favoured the intervention group, and sometimes this favoured the comparison group. In all cases, the effects were small or very small. However, due to the non-random nature of the comparison and the small number of schools involved it is difficult to draw secure conclusions from these impact estimates." (p.4)*

The impact evaluation for the Big Writing programme (Harland, Lynn, & Sainsbury, 2014) measured pupils' progress in relation to the four key areas or strands that formed the focus of the programme. These included compositional form and purpose, which is described as 'address to reader; vocabulary form and style'; textual shape, described as 'organisation, structure, linking of ideas'; spelling and handwriting described as 'accuracy; neatness and control'; and sentence structure and punctuation, described as 'connectives, punctuation and sentence openers'. The authors reported that there was no statistically significant change in pupils' writing performance from baseline to endpoint on either the individual strands or the overall scores. The researchers felt that there were plausible explanations for this outcome, primarily related to the short time span between the baseline and endpoint assessments, suggesting that impact may be detected over a longer time period but that attribution of any change to the impact of the Big Writing programme would require a control group.

Targeting a group of students aged 8-9 years who had low compositional fluency Berninger et al (2002) allocated the participants into one of four groups who each received twenty-four lessons over four months. There were four experimental conditions. Group one worked on spelling skills using the alphabetic principle, plus alternations. Group two worked on composing which involved reflective discussion and teacher scaffolding. Group three followed a combined tuition approach incorporating a combination of the elements of groups one and two. The fourth group acted as a control group and received writing practice, but without instruction. The authors found that only the

combined approach (group 3) led to significant increases in both spelling and composing.

Dunsmuir, et al (2008) explored a writing intervention that built on this research and adapted it to a UK context. They delivered four intervention sessions of 40 minutes duration each week for a total of 10 weeks to 115 year 4 students across 8 schools. The children were randomly allocated to one of two cohorts with one cohort receiving the intervention first (whilst the waiting group acted as controls) and vice-versa. The structure of the sessions (maximum group size of 6 students) included tuition on elements of phonic spelling skills and handwriting, composition skills, and cued spelling. The interventions led to significant overall improvements in spelling skills and written composition skills for those students in the intervention groups. However, the authors found no significant difference between the control and experimental groups on measures of progress with these skills. During the focus group feedback sessions, which followed the interventions, one of the key factors reported to be acting to reduce the effectiveness of the intervention was that the generation and articulation of ideas was challenging for many of the participants. In other words, spoken language skills.

A third programme, designed for secondary students, which Brooks (2016) reported as appearing to show evidence of effectiveness was the Grammar for Writing programme (Myhill et al, 2012, 2013). Of the small number of writing intervention programmes reviewed by Brooks this intervention appeared to have the most robust design and assessment processes. There were large

numbers of participants, 378 in the experimental group and 366 in the control group. They were dispersed across a large number of schools, 31 schools spread across 7 local authorities. The pre and post writing tasks were relatively authentic examples of written tasks with the participants being asked to write a first person narrative, drawing on personal experience and written under controlled conditions. To control for task bias the pre and post test writing tasks were split so that half the participants took task 1 as the pre-test and task 2 as the post test whilst the other half completed them in the reverse order. The test design and marking was carried out by a third party organisation, who are experienced in this field, but who had no connection to the intervention. The results showed only a modest effect size of 0.21 in terms of gains for the intervention group. However, because of the large number of students taking part in the research the difference in post-intervention scores between the experimental and control groups was highly significant in statistical terms.

To date, it appears that the outcomes of attempts to improve writing skills appear to have had only modest impact at best. Though some appear to have promise there are continuing difficulties around the rigour of the research designs, the validity of the writing tasks used, and translation of performance on the writing tasks into meaningful data that could be used for measures of effectiveness or for comparison purposes.

Though the use of spoken language features within several of the interventions they have generally included spoken language only in relation to its specific function in supplementing the writing production process rather than general

expressive language skills, of which writing is one form. The majority of the programmes which specifically target talking in relation to improving written skills link talk directly to the processes involved in writing. This is often referred to as ‘oral rehearsal’ which uses talk in a number of ways. As a way of reducing cognitive load during writing; for reviewing of text; for helping writers to ‘hear’ their own writing; or for practicing sentences aloud as a preliminary to writing them down. (e.g. see ‘Big Writing’, ‘Talk for Writing’, ‘Every Child a Writer’). The relationship between general spoken language skills and writing outcomes are not emphasised within the interventions.

Notwithstanding the importance of written language skills alongside spoken language skills as a vital means of expressing or sharing thought, the concerns regarding writing standards and the plethora of intervention programmes (see above), writing and oralcy have received a comparatively modest amount of systematic investigation within the broader field of literacy and language development (Miller & McCardle, 2011; Miller, Molfese, & Berninger, 2011; DfE, 2012). More specifically, there has been relatively little empirical research surrounding the relationship between spoken language skills and written language skills (Dockrell & Connelly, 2009; Shanahan, 2006). Thus, key questions such as; ‘Are speaking and writing alike or significantly different?’ and ‘Is practice in talking good practice for writing?’ remain significantly under-unexplored. The aim of this research was to explore the plausibility and potential usefulness of a model, closely mirroring the structure used to represent the ‘Simple View of Reading’ (SVR) model proposed by Gough & Tunmer (1986), in describing the relationship between spoken language skills

and the quality of written composition. In their model Gough & Tunmer (ibid) proposed that effective reading is the product of the combination of two independent skills, word decoding/identification (the 'mechanics' of reading) and linguistic comprehension, as represented in the top right quadrant (Fig.1).

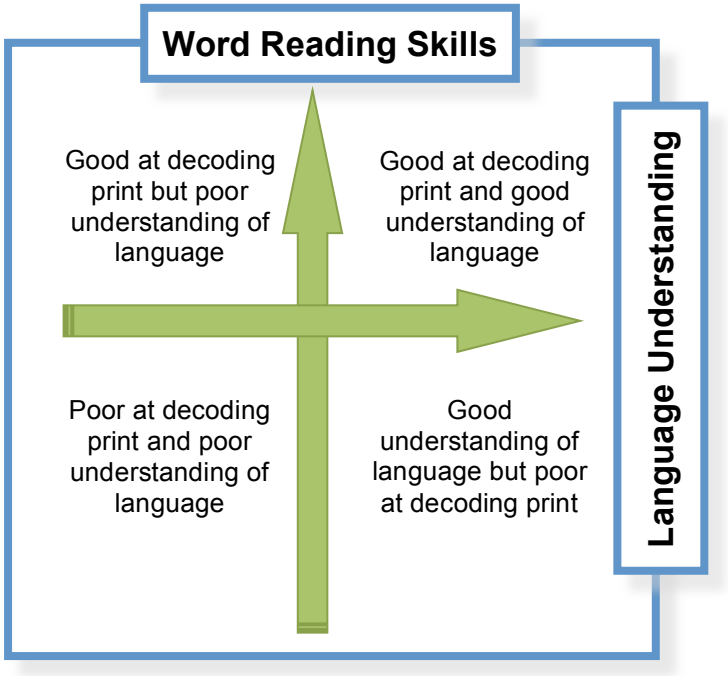


Figure 1. Representation of Gough & Tunmer's (1986) SVR model

The proposed 'Simple Model of Writing' seeks to explore whether, in a similar fashion, effective writing could be viewed as the product of the combination of two independent skills, transcription (the 'mechanics' of writing e.g. handwriting and spelling) and spoken language skills, as represented in the top right quadrant (Fig. 2). The models are discussed in more detail in sections 3.3 & 3.4.

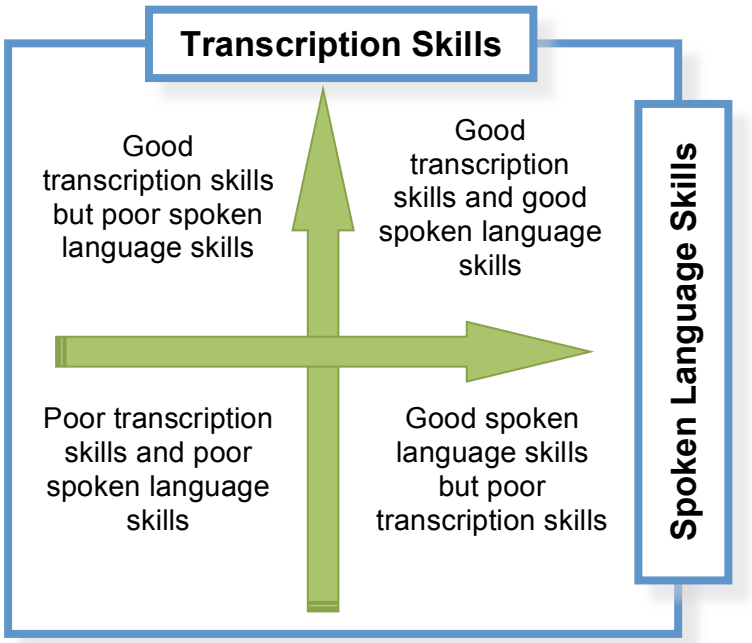


Figure 2. Representation of the proposed Simple Model of Writing

1.4 The value of understanding the relationship between spoken and written language skills

One could question the usefulness of exploring the relationship between spoken language skills and conventional forms of written skills at a time when, due to advances in technology and the use of social media, modes of communication are changing rapidly. Despite this, as well as the increase in usage of technology based transcription tools and methods (Plester, Wood, & Joshi, 2009; Clark, 2009, 2012; Wood et al, 2011), written expression in its conventional form (i.e. handwritten or typed) remains a core skill for both academic and work-based progress and participation in broader aspects of society (Kim, Al Otaiba, & Wanzek, 2015; Kucer, 2014; Graham, Gillespie, & McKeown, 2013; Miller & McCardle, 2011). It could be argued that the increase in the use of emails in the workplace has actually led to an increase in the importance of good written communication skills. Evidence from the North

American context emphasises the role that writing plays in obtaining employment, carrying out daily responsibilities to keep a job, and potentially gaining later promotion (National Commission on Writing [NCOW], 2004). The NCOW surveyed major US companies on the role of writing in the workplace. Despite the fact that nearly 70% reported that professional, salaried positions include some writing responsibilities, over a third also indicated that only about thirty-three percent or less of new employees have the writing skills that companies hiring staff most value (NCOW, 2004, p. 13). More than half of these companies reported that these same writing skills are taken into account during consideration for promotion. Results from the National Literacy Trust (State of the Nation and Impact report 2014/2015) reported that 11% of pupils in the UK completing the primary phase of their education in 2014 failed to meet the required level for reading and a greater proportion,15%, failed to reach the expected levels for writing. The Department for Education published interim results of the assessments completed by 11 year olds in 2016 which reflected greater concern (www.gov.uk National Curriculum assessments at key stage 2 in England, 2016 [revised]). In line with the new National Curriculum, different criteria were used to define and measure expected standards. As reported earlier (p.13), the interim results showed that 34% of pupils failed to meet the expected standard in reading (as measured by a nationally administered test), with 28% failing to meet the expected standard in writing (as measured by teacher assessment).

Accurately identifying the components that contribute to written composition skills and developing a better understanding of the relationships between these

components is increasingly urgent at a time where the methods of translating thought into text (transcription skills) are developing/expanding rapidly (Crystal, 2014). Spoken language development, for example, may become more prominent over the course of the next decade in the light of continuing improvements in the accuracy and sophistication of voice recognition and transcription devices/programs. The increasingly telegrammatic and idiographic form of written communication emerging from the use of mobile devices to send texts or sending messages via social networking sites such as Twitter and Instagram may also fundamentally alter the writing process in general. Given the rapidly changing nature of the transcription process and the increased interplay between informal and formal written communication via the use of contemporaneous written communication such as Twitter, texting and email, (Plester, Wood & Joshi, 2009; Wood et al, 2011) it is increasingly urgent that we gain a better understanding of the relationship between spoken and written language skills. This will help ensure effective communication skills irrespective of the media used.

1.5 Potential benefits for teaching

In the realm of teaching, a better understanding of the key components that combine to produce written expression skills, including the precursor component skills which contribute to early writing (Kim, Al Otaiba, & Wanzek, 2015*;* Hooper, Roberts, Nelson, Zeisel, & Kasambira Fannin, 2010), could be used to improve approaches to assessment (Westwood, 2009) and teaching (Berninger et al, 2002). This includes a consideration of the positive impact writing about content can have on improving learning (Graham & Perin, 2007).

This is particularly salient at a time when, within the UK context, the development of writing skills consistently fails to meet the expected standard for core academic skills (DfE Primary School Performance Tables, 2016). Similar concerns exist within the North American context where the most recent statistics in relation to writing indicate that only 30% of students in grades 8 and 12 (age 13 & 18) can write at or above a proficient level (National Center for Education Statistics - NCES, 2012). The latest statistics (2015) published by the NCES do not report on writing, but the figures regarding reading (only 36% scoring at or above the required level of proficiency at 8th-grade) suggest that poor literacy skills continue to be a concern.

1.6 Historical perspectives on the relationship between speaking and writing

Historically, the theoretical stances surrounding the relationship between speaking and writing have tended to split into three broad positions: very similar, with only minor differences; very different and largely separate skills, or alike at some points and different at others depending upon the stage of development and the context of the communicative act.

Sampson (1985) suggests that speaking and writing are essentially the same linguistic skill with differences of nuance not substance, to be thought of as simply different ‘dialects’ of English. Smith, Goodman and Meredith (1976) argue that written language is dependent on speech development and that the cultivation of speech is a crucial task from which other skills derive, whilst Rubin (1975) confidently asserts that written expression is ‘simply speech written

down'. Whilst the latter view could be seen as overly simplistic when applied to writing across the developmental span rather than just to the early stages of writing skills development, the suggested concordance between spoken and written language skills has such a strong surface plausibility that it can appear almost axiomatic.

Other theorists such as Olson (1977) have argued that they are entirely different linguistic skills, so distant so as to be akin to separate languages. At a basic level, the modality of output differs in that speaking involves producing sounds, whereas writing involves producing marks on a page. In addition, spoken language is a naturally acquired or primary skill for the vast majority of speakers, whereas writing is a secondary or taught skill. There are also differences in the way that language is used in written and spoken production (O'Donnell, 1974; Biber, 1988, 2009; Gibson, Gruner, Kibler, & Kelly, 1966). For example, written language appears to use punctuation in some ways that have no equivalent when using intonation in spoken language (Nunberg, 1990). Spoken language makes use of a wide range of supplementary cues such as tone of voice, pauses, facial expression, prosody and gesture which are not available within written discourse (though this is changing a little with the increasing use of visual devices such as emoticons and pictures within social media). Other distinctions relate, for example, to the speed, time-bound nature, spontaneity and immediately interactive nature of spoken conversation in contrast to the more measured process of written construction.

Despite such distinctions between spoken and written language, with the exception of technical writing such as legal documents or complex instruction manuals, much the same sentences are acceptable in each medium depending on the particular function of the discourse. For example, an expressive piece of writing might be quite similar to spoken language. In the other direction, a formal talk might be quite close to a written essay. In contrast, poetic writing will differ considerably from typical spoken language. Whilst the form that the examples of expression take is influenced by function, context and intended audience, they are nevertheless all forms of expressive language.

The third broad stance taken is that they are sometimes similar in form and structure and sometimes distinct depending on the stage of development and purpose of the communicative act (Kroll, & Vann, 1981). Kroll & Vann (ibid) articulated a developmental view where, at the early stages, writing is akin to speech written down. At the stage of education where the technical aspects of writing are being learned it becomes more formal and distanced from typical oral dialogue. When writing becomes skilled and sophisticated, where the author constructs an increasingly nuanced dialogue with the reader, it begins to resemble or reflect spoken language. Kroll & Vann (ibid) proposed a developmental model in which the relationships between speaking and writing progress through four stages: separate, consolidated, differentiated, and integrated. At the first (separate) stage, children's ability to write is very limited and therefore speaking and writing are very different. During the second (consolidated) stage, children's technical writing skills improve and, for a short time, writing is close to 'talk written down'. During the third (differentiated) stage,

children learn to differentiate between oral and written language, learning that speaking and writing in their most common forms often differ in structure and style. Writing is more formal, explicit and autonomous, whilst speaking tends to be more context dependent and conversational. The final (integrated) stage represents skilled writing and speaking where each mode of expression is either appropriately differentiated or systematically integrated depending on the context, audience and purpose of communication. According to this developmental theory, speaking and writing are both alike, and different, depending on the stage of development and the context, audience and function of communication.

Whilst such historical theoretical positions regarding the relationship between spoken and written skills continue to inform the general debate (Crystal, 2014), they have largely been replaced in the research literature by empirical, rather than theoretical, explorations of the relationships between oral and written language. However, these relationships have proven difficult to empirically investigate.

1.7 Challenges of exploring the relationship between speaking and writing

Despite the potential benefits of a greater understanding of the links between speaking and writing for the teaching and assessment of expressive language skills, our current knowledge is surprisingly limited. Whilst the study of spoken language, particularly in relation to language difficulties, has been researched more thoroughly, the study of expressive language as transmitted through the

medium of writing has received much less attention (Shanahon, 2006; Miller, & McCardle, 2011; Myhill & Fisher, 2010; DfE, 2012). There is a general consensus in the literature that there is less evidence relating to writing than reading (Myhill & Fisher, 2010). Indeed, international studies such as the Programme for International Student Achievement (PISA) and the Progress in International Reading and Literacy Study (PIRLS) use indicators from reading as proxy measures for literacy and don't include writing in their assessments.

Empirical research exploring the relationship between elements of oral skills and written skills is gradually emerging (Kim, Al Otaiba, & Wanzek, 2015; Kim, Al Otaiba, Wanzek, & Gatlin, 2015; Connelly, Dockrell, Walter, & Critten, 2012; Kim et al, 2011; Berninger & Abbott, 2010; Dockrell, & Connelly, 2009; Hayes, 2009, 2012; Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004; Cheneweth & Hayes, 2001; Abbott & Berninger, 1993). However, the assertion made by Groff (as long ago as 1979); that there is little research *"to prove the assumption that the oral language of children greatly influences their written language"* (p. 35), and Shanahan's (2006) concerns that research into the relations between oral language and writing is: *"more provocative than comprehensive" (p.174),* remain apposite. More recently, Silverman, et al (2015) echoed this view, suggesting that *"At this point, the empirical evidence for the relationship between language skills and writing outcomes is thin' (p.121).* These researchers advocate for a greater range of research in the area using diverse measures of language skill and writing.

A number of factors could be considered to contribute towards the relative lack of a large body of systematic research in this area. The emphasis on the relationship between oral language skills and 'literacy skills' (within both the educational and academic spheres of research) for the last two decades has centred on the development of reading skills and aspects of oral language skills directly related to the reading process. Examples include phonological processing, vocabulary development, linguistic comprehension, working memory, along with broader influences on oral skills development such as socioeconomic factors that are thought to contribute to reading progress (Snowling & Hume, 2012; Henning, McIntosh, Arnott, & Dodd, 2010; DCSF, 2009; Rose, 2006; Shanahan, 2006). Written composition skills have taken somewhat of a 'back seat' on this journey, with the word spelling aspect of written language skills forming the main focus of research (Clarke, Snowling, Truelove, and Hulme, 2010). The emphasis on the development of accurate reading and writing at the word level has been driven by the debate around 'dyslexia' and the push to improve reading standards (Elliot & Grigorenko, 2014; Bishop & Snowling, 2004; DCFS, 2009).

Significant challenges exist in relation to definition and conceptualisation of expressive language. The externalisation of thought via communicative behaviour can take several forms, many of which are difficult to define and measure, such as the use of gesture, context, artistic expression etc. Even when the focus is restricted to the expression of thought through the medium of words (either spoken or written) the area is complex and multi-faceted. Spoken language skills, for example, consist of a number of specific components and

broader contextual factors that combine to produce a spoken ‘performance’ (Crystal, 2014). This might include, but is not limited to, the physical aspects involved in speech production (phonological processing, motor planning, motor co-ordination), knowledge of vocabulary, sentence construction, grammar and syntax use. All of these component skills (or knowledge) will be sensitive to the functional context of the vocal performance such as being prompted to generate a persuasive argument, to recount an event, to construct a narrative, or some other function such as an on-going conversation. Added to these elements are complex factors related to a person’s confidence as a speaker within a specific social and cultural context and the role played by others involved in the dialogue (Kucer, 2014; Crystal, 2014).

Written language skills are similarly multi-faceted (Figure 3) with the demands of mastering the transcription skills of handwriting and spelling in place of accurate speech production and the differing functional contexts affecting the nature and form of the output (Fisher, 2012; Myhill & Fisher, 2010). Motivational factors, attitude, stage of development, practice effects, teaching influences and cultural factors (Kucer, 2014; Crystal, 2014: Graham, Berninger & Fan, 2007; Dunsmuir & Blatchford, 2004) are also involved.

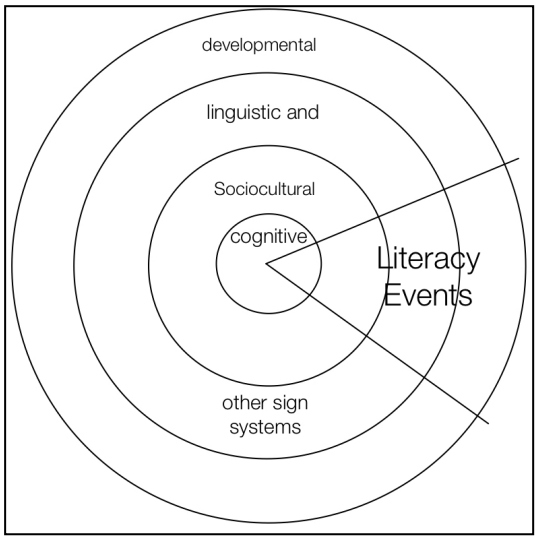


Figure 3. Representation of the complex and interconnected dimensions of literacy events. From 'Dimensions of Literacy', Kucer, 2014, p.6.

In short, spoken and written expressive language skills are complex and multi-dimensional, which renders them difficult to study empirically. This is perhaps well illustrated by Berninger, Rijlaarsdam, & Fayol (2012) who pose the question; *'What is the nature of the representations, operations, and cross-domain mapping and transformation processes involved in cognitive [to] linguistic translation?' (p.27)*. The complexity, depth and scope of this question is reflected in their attempts to map the factors involved. For example, the authors list 29 categories of 'kinds of cognitions' (with numerous specific variations) and 8 general classes of 'cognitive operations' that operate on these cognitions. They describe 7 general ways (with 29 sub-methods) by which access to these cognitions in unconsciousness may be gained during translation. Three general conceptual models related to the translation process are described, with 20 sub-models. They also outline 5 general ways (with 10 sub-processes) in which the relationship or interaction between executive function and working memory processes during translation may operate. This level of complexity, as reflected in this description of components, sub-components and processes involved in the translation of thought into language,

renders the area difficult to study empirically. In addition, one would need to take into account the complex process of communicating the linguistic message via the medium of either spoken or written expression. Given these challenges, it is unsurprising that examination of the relationship between speaking and writing is not well documented.

The complexity of both spoken and written forms of expressive language, make aspects of definition and measurement challenging. The expression of language through both speaking and writing can take several forms, depending on the function and context of the expressive act. Which one(s) should be chosen as representative measures of general linguistic competence in their respective domain of speaking or writing? For example, narrative production, expository arguments and definition of single words communicated via speaking or writing could be viewed as indicators of linguistic competency, but which specific form of linguistic expression could act as a reliable and valid measure representing overall expressive language skills in that particular domain? Added to this is the question of whether the mode of expression, spoken versus written, significantly alters the outcome. Also, the question of whether production of a spoken narrative can be directly comparable to the production of a written narrative and whether both could act as compatible measures of a core linguistic competence remains debatable (Kim, Al Otaiba, & Wanzek, 2015; Yu, 2010).

Along with the challenge of deciding which specific elements of expressive language to use as indicators of general linguistic competency, the context

within which the elements are sampled and which methods of collecting and analysing/measuring the samples are most appropriate should be considered. More naturalistic methods of collecting samples of language, though more ecologically valid and authentic, present challenges for measurement and analysis. Whilst increasingly sophisticated methods for analysis of more naturally occurring samples of children's writing and speaking have been developed (Dockrell, Connelly, Walter, & Critten, 2012; Hayes, 2012; Wagner et al, 2011; McMaster, Du, Parker, & Pinto, 2011; Justice et al, 2006; McMaster & Campbell, 2008; Puranik, Lombardino & Altmann, 2008), given the differences between spoken language and written language (Kucer, 2014; Crystal, 2014; Harris, 2009; Marinelle, 2009; Biber, 1988) directly comparable measures of spoken and written language output have proven difficult to develop (Kim, Al Otaiba, & Wanzek, 2015; Yu, 2010).

Chapter 2

Identification and review of existing research and theory

Despite the significant challenges facing researchers seeking to explore the relationship between spoken and written language skills, a growing body of research is emerging. A review of relevant theory and empirical research in the existing literature surrounding this area is presented in Chapter Two.

2.1 Issues regarding terminology

One of the key issues with research in this area is the varying definitions and means of measuring 'oral language'. For many of the researchers, oral language is conceptualised as the ability to understand the spoken language of others (Berninger, 2000). This is known as receptive language. Expressive language is the ability to use vocabulary and put words together into sentences to express one's thoughts. However, the two are often conflated as though they were a unitary construct. Berninger (ibid) suggests that, "*These two language systems are often lumped together as oral language although one is aural (by ear) and one is by mouth (oral) and the two systems may not develop at the same rate" (p.65).* The distinction between the two complementary but separate systems is brought into focus with children who experience specific language difficulties who can sometimes have a significant difference in development between their receptive and expressive language skills (Benner, Mattison, Nelson, & Ralston, 2009) The two language systems are localised in different brain structures (Kim, Relkin, Lee, & Hirsch. , 1997). Wernicke's area is associated with the understanding of language, whilst Broca's area is involved

in the production of language. Victims of strokes, where one or other of the two discrete areas is affected show particular language problems. For example, stroke victims who have damage to Wernicke's area, (Wernicke's aphasia), may experience great difficulty in understanding spoken or written language. They may produce spoken sentences that do not make sense but may not be aware that they are using the incorrect words. Those who suffer damage to Broca's area, (Broca's aphasia), may understand spoken and written language well but find great difficulty in producing the words to express their thoughts. Typically they also have difficulty with writing.

This blurring of the distinction between spoken language skills and receptive language skills and the subsequent variation in terminology was taken into account in the generation of search terms used within the literature search.

2.2 Literature search

A review of the extant literature was conducted to explore the relationship between spoken and written language. As noted, there is a dearth of research that specifically examines this link. Thus, the search strategy also incorporated research that focused on either oral or written language where a relationship, though not necessarily the primary focus of the research, was suggested. This could be, for example, because the research considered this relationship within the context of a larger, overarching theoretical construct (such as the general development of written language skills). Failing to explore such research because it does not solely investigate the relationship between spoken and written language could result in the potential loss of valuable insight. The

research presented in the literature review was subdivided into several categories for the purpose of summarising: evidence for an integrated language system, evidence from emerging writers, evidence from children with speech and language impairment, evidence from older students, and evidence from transparent orthographies.

2.3 Search Strategy

Initially, the search terms “oral language”, “written language”, “oral and written language”, “writing skills”, and “speaking and writing” were used based on their relation to the research questions being explored. These keywords were then entered into the EBSCO search engine. The specific databases covered by the search included Education Research Complete, PsycARTICLES, and psycINFO (accessed between 2nd & 9th September 2016). The search looked for these specific terms using a Boolean structure (though the settings also allowed for related terms to be included within the search) within either the title or the abstract of articles. Additional filters set within the EBSCO search engine for the search process were that articles had to have been published from the year 2000 onwards, that they had to appear in peer reviewed journals and that references were available in the article. Further inclusion criteria for the literature review, applied by the researcher from scrutiny of the results which were generated from the initial settings, were that the articles must be available in English, form part of an empirical study, and contain oral or spoken language and at least one of the transcription skills of spelling and handwriting as the components within the study. The titles and abstracts of the articles produced by these searches were then scanned to ascertain their relevance to the

research aim and questions, allowing the researcher to screen out spurious results. Full reports were then obtained for the articles identified following this initial screening (with spurious results again being filtered out). Where more information was necessary to determine the eligibility of an article for the review, further information was sought from the author. Finally, the reference lists of included articles were scanned and explored for potential additional articles (sometimes referred to as a 'snowball' literature search technique; see Chapman, Morgan & Gartlehner, 2010). Repeated articles were filtered out throughout the article selection process.

The search terms "oral language" and "written language" when entered as individual search terms did not prove to have sufficiently discriminatory power generating 2,553 and 2,350 results respectively (see Figure 4). Initial visual inspection of the first 100 results in each case confirmed that these search terms were too broad. The search phrase "speaking and writing" (1,380 results) was also found, following visual inspection of the first 100 results to be similarly overly inclusive. Complete visual inspection of the outcomes from the search phrase "oral and written language" (698 results) suggested that this phrase appeared to best balance the degree of specificity and inclusivity required to capture key articles. However, the search phrase "talking and writing" (321 results), though producing a very varied range of articles, did produce two key articles, including a recent meta-analysis of potentially relevant research (Kent & Wanzek, 2016) which had not been identified by the search using the phrase "oral and written language". Given the small number of relevant articles identified by content of title or abstract (12), all of the papers were read in full

and the reference lists were scanned and explored for potential additional articles. This generated a number of additional key research articles (2), including several articles within published books. Where judged appropriate, the books were accessed and the articles scrutinised. The search process identified a total of 10 articles which were judged to be directly relevant to empirical explorations of the role of spoken language, mediated by transcription skills, in the writing process (Figure 4).

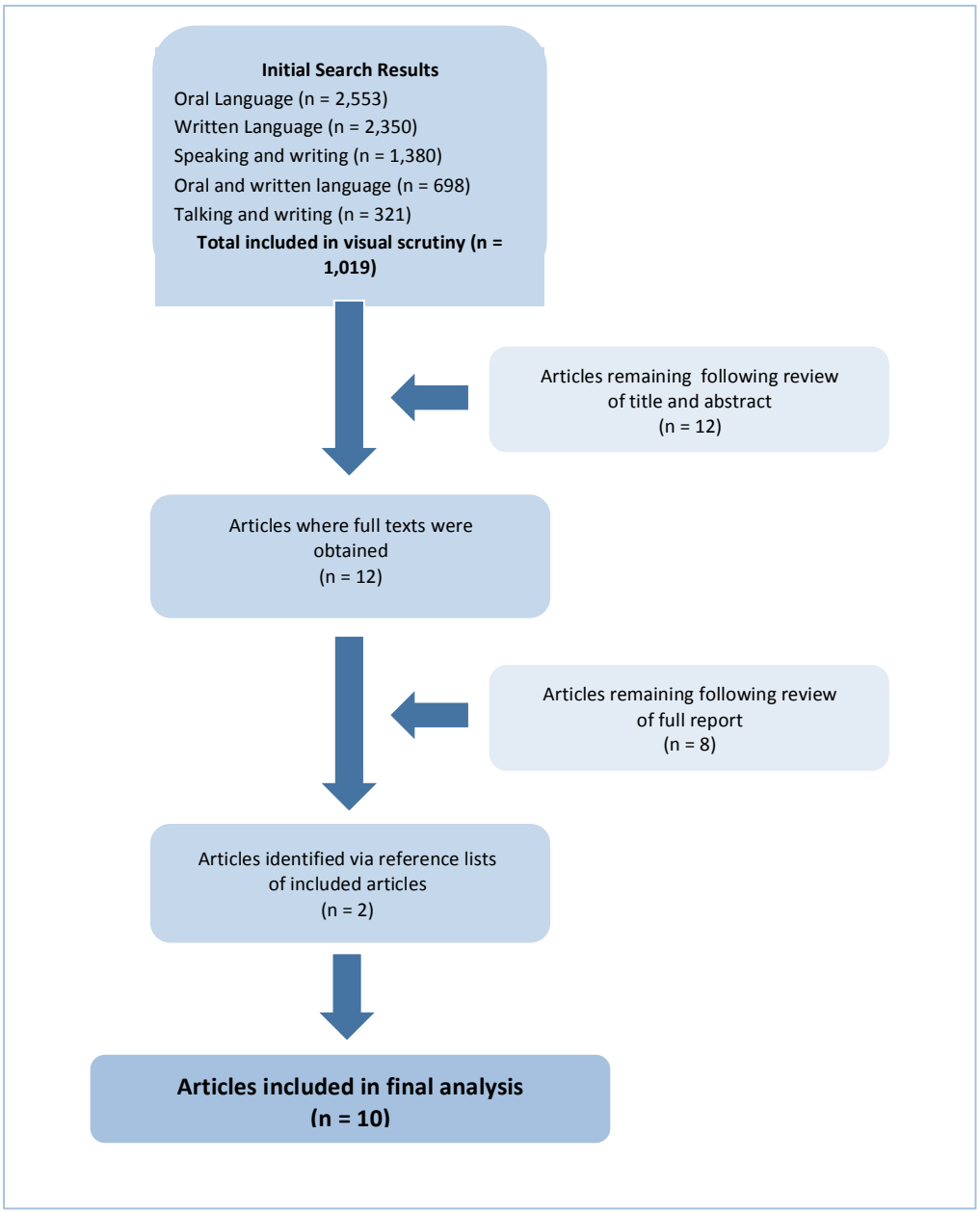


Figure 4. Summary of the article selection process (based on a figure in Nadeem et. al., 2013)

2.4 Results of the literature search

Search results support the assertions regarding the paucity of research that explicitly examines the links between speaking and writing (Dockrell & Connelly, 2009). Nonetheless, the literature search identified an accumulating number of empirical studies that have attempted to explore the contribution of spoken language (often in combination with other factors) to writing skills at various points of development (see Table 1). The identified studies were reviewed in narrative form within the relevant sections of the chapter where they fitted most closely. Where considered to be of significance in clarifying the theme being elaborated, and not sufficiently addressed by the post 2000 studies, a small number of additional studies carried out before 2000 (and therefore not reflected in the literature search) were included in the analysis of relevant literature. Characteristics of the studies generated by the search are outlined in Table 1.

Table 1. Study Characteristics (adapted from Kent & Wanzek, 2016)

Study	*n*	Grade/age level	Ability level of sample	Component skill
Arfe, Dockrell, & De Barnardi (2016)	83	7 – 8 yrs.	Full range	SP, OL
Berninger and Abbott (2010)	128	1st - 5th (6 – 11 yrs.) (Cohort1)	Full range	SP, RDG, OL
	113	3rd -7th (8 – 13 yrs.) (Cohort2)	Full range	SP, RDG, OL
Babayigit and Stainthorp (2011)	103	2nd – 4th (7 – 10 yrs.) 3rd – 5th (8 – 11 yrs.)	Full range	RDG, OL, SP

Table 1. (continued)

Study	*n*	Grade/age level	Ability level of sample	Component skill
Chenoweth and Hayes (2001)	13	Undergraduates	Full Range	OL
Connelly, Dockrell, Walter & Critten (2012)	99	11 yrs.	SLI/Full range	SP, OL, HW
Dockrell and Connelly (2015)	46	10:5 yrs.	SLI/Full range	SP, OL, HW
Dockrell, Lindsay and Connelly (2009)	58	11 – 16 yrs.	SLI	OL, RDG, HW, WM
Kim, Al Otaiba, and Wanzek (2015)	157	K – 3rd (5 – 9 yrs.)	Full range	SP, HW, RDG, OL, ATT
Kim et al (2011)	242	K (5 -6 yrs.)	Full Range	OL, SP, HW, RDG
Pinto, Tarchi, and Bigozzi (2015)	109	K – 1st (5 – 7 yrs.)	Full Range	OL, SP

Note. RDG = reading: OL = oral language: HW = handwriting: SP = spelling

Exploring the theoretical and empirical evidence

2.5 The case for a common expressive language core

If the premise that speaking and writing are very closely related forms of expressive language, differing only at the point of the mode of communication, is to be considered plausible there would need to be evidence demonstrating shared roots up to the point of translation into speech or writing. There is some

empirical evidence of a common core language competence linking all forms of linguistic understanding and expression. For example, Berninger and Abbott (2010), using subtests from the Wechsler Individual Attainment Test (WIAT II, Wechsler, 2005) investigated the development of skills in the areas of reading comprehension, listening comprehension, written expression, and oral expression (language by eye, ear, hand and mouth) within and between individual students. Two cohorts of students in American schools, spanning grades 1 to 5 (ages 6 to 11) and 3 to 7 (ages 8 to 13), participated in the study. Their analysis pointed to a high degree of correspondence in the development of these four areas of language suggesting a common underlying language dimension. However, when investigating the ipsative profiles of individual participants (the degree to which the four aspects of language they measured differed within an individual's profile and how this balance changed over time) they found that 25% to 30% of individuals showed relative strengths or weaknesses (defined as plus or minus 1SD) in one of the four language dimensions. The ipsative profile tended to change across grades 3 to 5 (ages 8 – 11) with specific aspects of language progressing at different rates. They suggested that, whilst the four language systems are closely related, each system remains unique. Written expression was measured using the analytic scoring rubric from the WIAT II (Wechsler, 2005). This subtest includes three written expression tasks. For Written Word Fluency, the child generates as many words as possible within a given time limit (one minute) for a designated category (things that are 'round'). For Sentence Combining, for several separate trials the child combines two or three separate sentences to create one new sentence with the same meaning. For Paragraph Writing the child

writes a paragraph in response to a prompt, 'My favourite game is….' within a given time limit (up to 10 minutes). With scores allocated in relation to spelling, punctuation, organization and vocabulary range. Written expression never featured as a relative strength in any participants' individual profile. In fact, *"ipsative scores for written expression consistently differed from the ipsative scores for the other language systems across the grade levels analysed"* (p.644). Where written expression was identified as a relative weakness in grade 1 (age 6 – 7), the weakness increased in magnitude and persisted over time. When exploring the unique contribution of oral expression to written expression the results showed that, though it contributed uniquely in grade 7 (age 12 – 13), the relationship was not clear-cut, with listening comprehension joining with oral expression in contributing towards written expression and sometimes contributing uniquely. The researchers suggest that *"….oral language may continue to develop during the school years when children learn written language and may contribute to learning to write" (p. 649)*. This study did not include an analysis of the potential impact of transcription skills (spelling and handwriting) in mediating the relationship between oral language and writing, though investigation of the relationship between transcription skills and writing has been investigated by the authors and other researchers in separate studies (see, for example, Wagner et al, 2011; Berninger et al, 1997; Graham et al, 1997; Jones & Christensen, 1999; Graham, Harris & Fink, 2000). It is possible that such transcription skills may have played a mediating role acting as a limiting factor such that written expression never featured as a relative strength for any of the participants and was represented to a greater degree than the other factors as a relative weakness within individual profiles.

Related more specifically to expressive language, the notion of a linguistic source common to both oral and written modes of expression would fit with the processing model proposed by Levelt (1989). In this model language production is split into three strata; 'conceptualization' (preparation of the message to be conveyed), 'formulation' (conversion of the message into linguistic form which is labeled as the 'Lemma Stratum'), and 'word form' (articulation of the message through either writing or speaking- phonology or orthography).

Building on Levelt's model, Cleland & Pickering (2006) have proposed that though the conceptual and lemma strata are modality neutral (the same for both speaking and writing), the word form stratum is modality specific. This would suggest that, at a deeper level, the two forms of linguistic expression share common roots.

Supporting evidence for the presence of common linguistic or cognitive roots is provided by syntactic priming experiments where priming effects occur both within and across modalities in oral and written responses to priming sentence structures (Cleland & Pickering, 2006). Syntactic priming is the tendency of speakers or writers to use previously processed syntactic structure. For example if, when describing a picture, a particular syntactic structure is used such as a *Prepositional-Object* sentence (e.g. *The woman is feeding a yoghurt to the girl),* the same form of sentence structure is likely to be repeated when describing an unrelated but similar scenario (e.g. *A shopkeeper sold some sweets to a customer).* Similarly, if a different syntactic structure, such as a

Double-Object sentence, had been used to describe the initial picture (e.g. *The woman is feeding the girl some yoghurt*), then the subsequent sentence would follow this syntactic pattern (e.g. *A shopkeeper sold a customer some sweets*). Using a sentence completion method, Cleland & Pickering (ibid) found strong evidence that this syntactic priming effect operated across modalities (e.g. from speaking to writing and vice-versa). This suggests that, at least at the sentence production level, speaking and writing share common production mechanisms.

At the level of grammatical information concerning individual words, evidence from neuropsychology (Caramazza & Hillis, 1991) suggests that grammatical category information is represented *"separately and redundantly in each modality-specific lexical system"* (p. 170). Marinellie (2009) also found differences in children's display of lexical knowledge between oral and written definitions of words. However, evidence from neuropsychology that examines the production of sentences rather than single words, is supportive of a shared mechanism model. For example, studies of impairments associated with the majority of reported cases of Broca's aphasia show deficits in sentence production across spoken and written modalities (Benson & Ardila, 1996).

The degree to which shared roots at this deeper level may simultaneously influence competencies in the two forms of linguistic expression despite the complex interaction which exists within and between the development of spoken and written language (Horowitz and Samuels, 1987) is a matter for further investigation (Hayes, 2012). Whilst direct exploration of this link is

scarce, evidence from empirical studies where speaking and writing have featured may help clarify the plausibility of such a proposition.

2.6 Evidence of the speaking-writing relationship arising from studies of emergent writers

Kim et al (2011) investigated the link between the development of oral language skills and writing when including the contribution of mechanical transcription skills. Exploring the emergent writing skills of a large cohort of American Kindergarten children (n = 242), they examined the relative influence of oral language skills, spelling, letter writing fluency (a proxy measure of handwriting proficiency), and reading, on expressive writing skills. They found that oral language (comprised of vocabulary, grammatical knowledge, and sentence imitation), spelling and letter writing fluency were uniquely and positively related to writing skill accounting for 33% of the variance after accounting for reading skills. However, given the very early stage of skills development, particularly in relation to formal literacy skills, they speculated that this pattern might change at a later developmental stage.

Kim, Al Otaiba, and Wanzek (2015) found a similar pattern of relationships when exploring Kindergarten predictors of third grade writing. They took initial measures of letter writing automaticity, spelling, oral language (comprised of vocabulary, grammatical knowledge, and sentence imitation), word reading, and attention in a group of 157 children. The children were then assessed on writing in third grade using one narrative experimental prompt (the children were asked to write a story about what happened when they got home after school), and

two expository prompts (the children were asked to write about a favourite game and to write about a classroom pet they would like and why). The outcome from structural equation modelling identified Kindergarten oral language skills and lexical literacy skills (spelling and word reading) as unique predictors of third grade writing quality. They found that the role of oral language as an independent predictor of subsequent writing quality differed between narrative writing and expository writing. Whilst Kindergarten oral language skills uniquely contributed to narrative writing in third grade, this was not the case with expository writing. Their explanation for this finding related to the possible differences in syntactic sophistication required to successfully produce narrative versus expository writing. Narrative writing, they suggested, was more closely linked to the syntactic structures used in oral language production. If this is the case then one might expect children with speech and language impairments to produce poorer quality written compositions, more pronounced in narrative writing tasks.

2.7 Evidence from children with Speech & Language Impairments (SLI) and older students

Connelly, Dockrell, Walter, and Critten (2012) investigated the relative effects of oral language development, spelling and handwriting skills on the written language skills of students (aged 11 years) both with and without a specific language impairment (SLI) and found that oral language skills were a key predictor of written language in both groups. The researchers used the concept of ‘language bursts’ as a measure of compositional activity during the writing process. Hayes (2009, 2012) used the term ‘language bursts’ to describe the

pattern of pauses and bursts of activity observed during the writing process. Bursts are said to be associated with both writing productivity and writing quality. When compared to less skilled writers, skilled writers are observed to produce a greater number of bursts during the writing process. The bursts also tend to be longer in duration. Language bursts have been identified in skilled (Kaufer, Hayes & Flower, 1986; Chenoweth & Hayes, 2001; Hayes, 2009 & 2012) and developing writers (Alves, Branco, Castro, & Olive, 2011 – quoted in Hayes, 2012 [ibid]). Connelly et al (2012, op.cit.), found that oral language skills development was positively correlated to written composition outcomes for both cohorts (as measured by number and length of bursts) where transcription skills were strong.

This link between oral language skills and written composition was further illustrated in a study by Dockrell & Connelly (2015) who examined the writing of 23 children with SLI (average age 10:5) with that of 23 children matched for age and 23 matched for vocabulary levels (though younger in age). They found that the children with SLI performed significantly below their age matched peers on all aspects of writing, including spelling.

However, their performance matched that of the group with equivalent vocabulary levels. A regression analysis indicated that written measures of spelling errors and oral language measures of vocabulary were significant predictors of writing quality for the SLI and vocabulary matched groups. In addition, the researchers found that spelling accuracy and handwriting speed were significant predictors of burst length and writing quality for all groups. The measure of writing quality was the *writing expression* test from the WOLD (Rust,

1995). Children were allowed 15 minutes to write a letter outlining their ideal house. The letter was assessed on six dimensions, each rated on a 4-point scale, which were scored independently of each other: ideas and development; organisation, unity and coherence; vocabulary; sentence structure and variety; grammar and usage; capitalisation and punctuation.

Though not using the measurement metric of burst length, a similar pattern of relationships persisting over a longer period of development had been identified by Dockrell, Lindsay and Connelly (2009) who reported on the outcomes of a study tracking the progress of a group of 58 children with speech & language impairment (SLI) from the age of 8 to 16. During that period the children were assessed at regular points (8,11, 12, 14, & 16) on measures of writing performance and its' relationship with oral language, handwriting fluency and reading. They found that measures of vocabulary and spelling were consistent factors in explaining variation in writing quality.

There is some evidence that this relationship between general linguistic competence and written composition appears to persist into adulthood. Research involving university students studying languages (Chenoweth & Hayes 2001) found that language bursts (see above), which occur during the translation process during writing, are associated with linguistic experience. The researchers found that the greater the degrees of experience students had with the spoken form of the language, the longer the language bursts and the better the quality of the written compositions.

2.8 Evidence from studies of writing in transparent orthographies

The unique role of spoken language skills in influencing written language skills is often difficult to discern, particularly at the earlier stages of writing development. This is because of the constraining effects of transcription skills (particularly spelling) and their impact on the effective operation of cognitive structures or processes posited to be key components of writing skills such as working memory and executive function (Abbott & Berninger, 1993; Berninger, 1999). Spelling, particularly when writing in English, is considered to be a constraining factor. Juel (1988) followed young writers from grade 1 to grade 4 and found that spelling skills exerted a major impact on writing production accounting for 29% of their writing quality in grade 1, reducing to 10% by grade 4. This relationship has been reflected in subsequent research (Williams, Larkin, & Blaggan, 2013; Abbott, Berninger, & Fayol, 2010; Kim et al, 2011).

In more transparent orthographies (languages in which the written form matches the spoken sound pattern much more closely e.g. Finnish, Spanish, Turkish etc.) accurate spelling develops much sooner than in English. Therefore the relative impact of other factors such as oral language skills can be more clearly discerned at an earlier stage of development (Pinto, Tarchi, and Bigozzi, 2015). Pinto, Tarchi, and Bigozzi (ibid), followed a group of 109 Italian children over three years from Kindergarten to second grade and found a strong link between oral narrative competence in Kindergarten (5 to 6 years) and written narrative competence in second grade (7 to 8 years) via the meditational effect of orthographic competence. The relative impact of spelling and handwriting development on written composition was a factor because of the young age of

the participants and the fact that Italian, though much more ‘transparent’ than English, nevertheless still contains a number of spelling ambiguities. A similar pattern was found by Arfe, Dockrell, & De Bernardi (2016) when they explored the components contributing to the written composition skills of 83 Italian children aged 7-8 years. They found that spelling along with oral and written grammatical skills were important factors predicting the written composition skills of the participants. The researchers found that oral skills contributed to a greater extent than spelling skills to overall text quality.

Exploring the development of written composition skills in a more transparent orthography, where the development of accurate spelling is likely to be more rapid, Babayigit and Stainthorp (2011) tracked the development of written composition skills in two cohorts of Turkish-Cypriot children from 2nd – 3rd grade (average age 7:8) and 3rd – 4th grade (average age 9:7). Their results indicated that, in these groups, the mechanics of writing (spelling and handwriting) were not related to compositional quality. The authors emphasized the central role of oral language skills in developing children's comprehension and written composition.

The evidence from research in more transparent orthographies, where spelling exerts less of a constraint, brings into focus the impact of oral language skills, particularly narrative production, on written composition quality.

2.9 Evidence linked to the 'gender gap'

Though not ostensibly an exploration of the relationships between spoken language, transcription skills and written composition, and therefore not included in the literature search, the research regarding gender related literacy attainments in England may provide some supplementary evidence for the presence of an enduring relationship between spoken language competencies and written composition skills.

The impact of language skills on literacy skills, including written composition skills, is reflected in the persistent issue with the gap between girls and boys literacy achievement, including writing (Ofsted, 2012; DfE, 2012; Harland, Lynn, & Sainsbury, 2014). Though measured on this occasion in terms of reading outcomes (the usual proxy measure for 'literacy attainment') rather than written composition skills, research commissioned by Save the Children (Moss & Washbrook, 2016), found that two thirds of the gender gap in achievement in reading skills at age eleven is attributable to the fact that boys, on average, have poorer language skills than girls at age five. Using national databases, they tracked the percentage of boys who were attaining below the expected standard in language development at age five with their progress with reading ages at seven and eleven. The same tracking process was used with the percentage of girls who were attaining below the expected standard in language development at age five. The researchers reported that the proportion of boys at age five with poor early language and attention skills was greater than that for girls. The effects of poorer language and attention skills at age five were the same for both boys and girls in terms of outcomes for reading at age 11, and

were stable and constant across all social classes. However, because boys are more likely to fall into this group this affected the gender gap in attainment at age eleven.

2.10 Summary of literature review

There is an emerging body of empirical evidence that is supportive of the proposition that good oral language skills are positively and uniquely related to good written skills where the mechanical skills of handwriting and spelling are well developed. The strength and direction of this relationship (i.e. to what degree oral language skills determine written language skills or vice-versa) and how this relationship changes over the developmental trajectory remain questions requiring further clarification (Shanahon, 2006; Biber, 2009). This is understandable given the complex and multi-faceted nature of writing with several component skills or broader factors having been shown to be related to writing, including for example; handwriting fluency (Berninger, 1999; Graham et al, 1997: Medwell, Strand & Wray, 2009), working memory and executive function (Connelly, et al ibid, 2012; Bourdin & Fayol, 1994; Abbott & Berninger, 1993), instructional variables (Olinghouse, 2008), reading (Abbott, Berninger & Fayol, 2010), pupil's views of themselves as writers (Bottomley & Henk, 1997), and the broader cultural influences on writing (Crystal, 2014: Kucer, 2014).

Even when restricting the focus to a small range of cognitive factors, such as handwriting, spelling and spoken language skills as represented in the proposed Simple Model of Writing, these factors interact in a dynamic and developmentally sensitive fashion.

One of the major ‘constraining’ factors within the English language is spelling. Whilst this becomes less of a constraining factor as children progress through the education system and spelling skills become better established, it has been demonstrated to significantly affect both writing productivity and writing quality for most students up to the age of 10-11 (Abbott, Berninger, & Fayol, 2010).

Particularly in the early stages of learning to write, handwriting also exerts a constraining effect, though in the majority of students this skill becomes fairly well established by age 10 (Abbott et al, 2010, op. cit.). However, transcription-related skills continue to contribute to compositional fluency and quality further through the education system, albeit to a lesser magnitude (Abbott & Berninger, 1993).

There is a developmental shift between ‘learning to write’ where at the earliest stages writing closely resembles ‘speech written down’ and the direction of influence is predominantly oral skills > writing, to later stages where ‘writing to learn’ becomes more prominent and the relationship between oral language and written language becomes more reciprocal with each affecting the other. Running alongside this developmental trajectory is the impact on both oral and written language skills of exposure to printed material via reading comprehension (Abbott, Berninger, & Fayol, 2010).

Evidence from research in more transparent orthographies, where the constraining effects of transcription skills are less dominant and quicker to fade

(e.g. Babayigit & Stainthorp, 2011) is supportive of a strong relationship between oral competencies and written skills.

Though there are not a large number of empirical studies directly exploring the relationship between oral and written language skills (see Table 1), there is an emerging consensus within the literature that there is a strong and consistent relationship between oral and written language skills, but that the strength and nature of this relationship changes over time and is mediated through a range of factors (Kent & Wanzek, 2016).

Chapter 3

Exploring an alternative Simple Model of Writing

Chapter Three considers the representation of the role of spoken language (sometimes referred to as oral language) within existing models of writing and presents the case for a model illustrating a more explicit depiction of the role of spoken language in the writing process.

3.1 Representation of the role of spoken language within existing models of writing

A number of models of writing have been developed, for example, 'the simple view of writing' (Juel, 1988) and the 'not-so-simple view of writing' (Berninger, 2000). These models, along with other iterations (Berninger & Swanson, 1994; Chenoweth & Hayes, 2003 – see Figure 5) typically represent modifications to the original Hayes and Flower (1980) model which include working memory and executive function as influential cognitive structures or processes in the translation of thought into text (Berninger & Swanson, 1994; Berninger, 2000). Within Juel's (1988) original model the act of writing was split into three broad sequential processes; the generation of the ideas ('ideation'), the transformation of the ideas into the appropriate linguistic structure ('translation'), and the mechanical act of writing or typing ('transcription'). Running alongside this process is the act of revision (considering or reviewing the linguistic structure you are preparing to transcribe, seeing or reading what you've written, thinking about it and amending or changing the current or subsequent content).

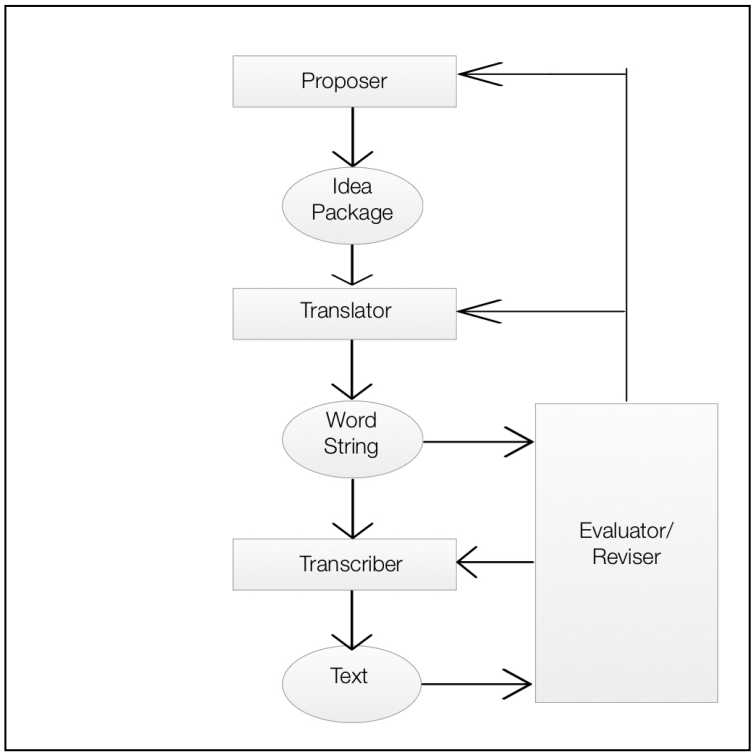


Figure 5. Chenoweth and Hayes model of the text generation process (source: Chenoweth and Hayes, 2003, p. 113)

This model of skilled writing, however, was not thought to reflect all aspects of writing development, such as the crucial role played by transcription skills (Berninger, Fayol, & Alamargot, 2012; Berninger & Swanson, 1994; Berninger, 2000), particularly in the early and intermediate stages of writing development. The skills of handwriting and spelling, if not automatic, are seen to exercise significant constraints on the processes of proposing and translating as outlined in the model. In a revised model (Figure 6), Hayes (2012) included transcription as a major factor in the writing process. The model also incorporates the role of broader factors such as motivation and the task environment. The limiting effect of working memory processes or resources is reflected within the structure in the form of temporary ‘buffer’ stores (labelled ‘Ideas Package’ and ‘Surface

Structure' in the diagram). The first of these is posited to hold the ideas in mind whilst they are translated into the surface form of the linguistic structures through which they are going to find expression. The second serves to hold in mind the surface structure of the language to be expressed whilst the motor planning and execution process related to either speaking or writing is completed.

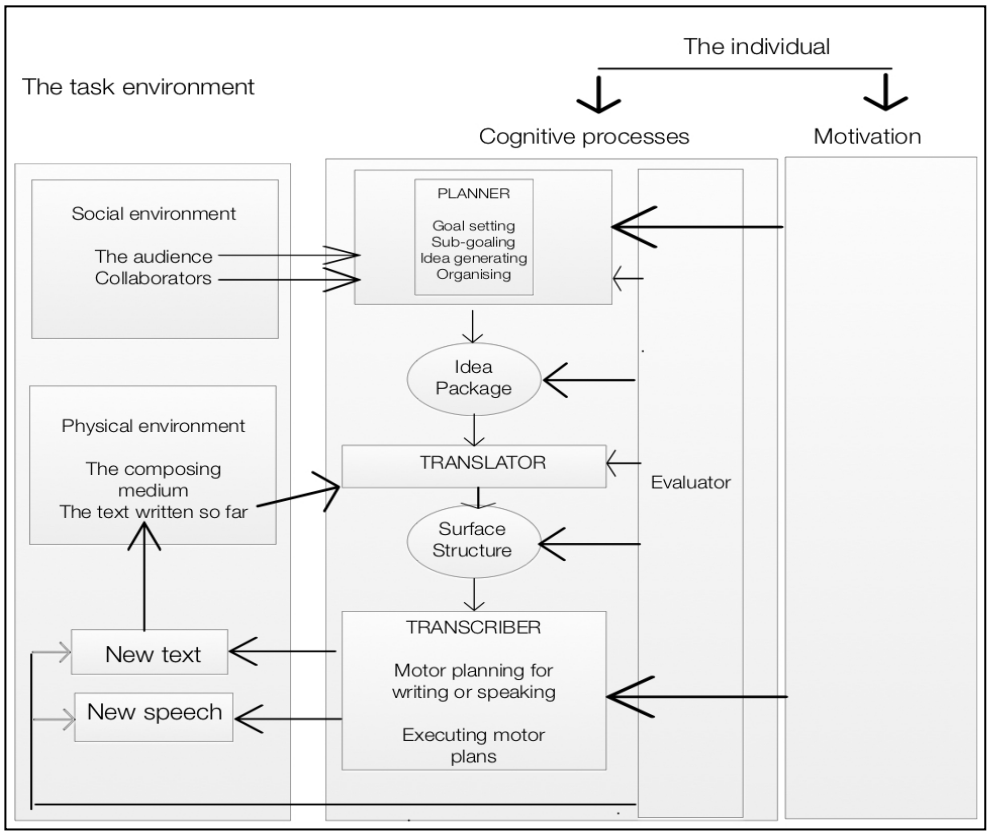


Figure 6. Hayes' revised model of the writing process (source: Hayes, 2012, p.16)

This is also reflected in a modified 'simple view of writing' framework proposed by Dockrell, Marshall, & Wyse (2015) in which the three key components of text generation, transcription, and executive functions (which the researchers describe as *supervisory attention, goal setting, planning, reviewing, revising,*

strategies for self-monitoring and regulation) operate within a system where the cognitive flow is determined by working memory capacity which is posited to be an important cognitive structure or process linked to writing quality (Hooper et al, 2011; Berninger et al, 2010). The limitations of working memory make writing a challenging task given the multiple processes involved such as planning, revising, transcription (Berninger et al, 2010). McCutcheon (1996) found that poor writers typically have poorer working memory when compared to good writers. Berninger (2000) reported that working memory had both general and domain specific impacts on the writing process.

General oral language skills are not an explicit component within any of the models, but could be assumed to contribute to text generation skills. However, general oral language skills (however they are defined and measured) and specific text generation skills may not overlap to the degree assumed within the models (Arfe, Dockrell, & Bernardi, 2016). One interpretation of the conceptualisation presented by Hayes (2012) could be that if the motivation is present, the task environment is suitable, and the act of transcribing does not overload the buffer stores, then general linguistic competence will correspond with compositional quality. This fits with Hayes' (ibid) inclusion of the production of speech within the 'transcriber' to take account of the observation that some writers articulate the surface structure in order to evaluate it before writing it down. Whilst ostensibly a model specifically depicting the processes involved in writing, rather than a general model of linguistic expression, it could be thought of as depicting expressive language skills as deployed for the specific task of writing. In this interpretation the act of expression differs in terms of cognitive

processing only at the point of transcription (i.e. motor planning for writing or speaking and the subsequent execution of that motor plan).

3.2 The case for an alternative 'Simple Model of Writing' framework

All of the current models of writing incorporate expressive language skills, variously referred to as 'text generation', 'ideation' or 'translation' within the writing process. However, the degree to which these language skills, which are deployed within the writing process, relate to general oral language skills is unclear (Arfe, Dockrell, & De Bernardi, 2016 op.cit). Kim et al (2011), exploring the componential skills of beginning writers at the end of Kindergarten stated that *"it is reasonable to hypothesize that individual differences in children's sophistication in oral language may be related to children's writing skills"* (p.517). Whilst the empirical evidence (see above) confirms the relationship between oral language skills and written skills and supports Kim et al's (ibid) 'reasonable hypothesis', the role of general oral language skills, specifically spoken language, has not been explicitly represented within models of writing thus far.

This lack of explicit representation of the role of general spoken language skills in the models of writing is important because the way that the writing process is conceptualised and communicated to practitioners such as teachers has a direct impact on policy and practice within educational settings. Hence, though 'talking' features in several writing instruction programmes such as 'Talk for Writing' (see evaluation by Dockrell, Marshall, & Wyse, 2015), Every Child a Writer (see evaluations by Fisher & Twist, 2011), and Big Writing (see

evaluation by Harland, Lynn, & Sainsbury, 2014), it is talking related directly to the writing process, ‘talking about writing’, rather than practicing general spoken language skills. Dockrell, Marshall, & Wyse (2015) suggest that one of the main advantages of depicting a clear model of the components contributing to writing is that it enables teachers to more effectively identify and teach the component skills. Hayes & Olinghouse (2015) suggest that there may be advantages in having several such models of writing with which to inform curriculum design and instructional approaches.

3.3 The Simple Model of Reading

Within the domain of reading the ‘Simple Model’ of Reading, more commonly referred to as the Simple View of Reading (SVR) (Tunmer & Gough, 1986; Hoover & Gough, 1990) (Figure. 7) which it depicts, has been used extensively to describe the relationships between the key components that contribute to effective reading skills (Duff & Clarke, 2011; DfE, 2009; Kendeou, Savage, & van den Broek, 2009; Rose, 2006) and has been used to inform government guidance on the teaching of reading via the Letters and Sounds programme (Primary National Strategy, DfES, 2007).

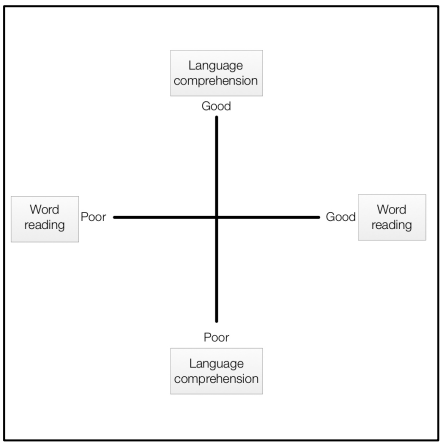


Figure 7. The simple model of reading (adapted from the original model proposed by Gough & Tunmer, 1986)

The implication of the simple view of reading is that reading comprehension is the product of general linguistic understanding and the mechanical skills related to decoding print. Listening comprehension and reading comprehension have been found to depend on the same underlying comprehension system (Snowling & Hulme, 2012; Clark, Snowling, Truelove & Hulme, 2010; Nation & Snowling, 1998). Thus the concept of 'reading comprehension' as a separable discrete skill is questionable. It is general comprehension of language, differing only in the mode of access to the language source, via printed versus spoken words, with thinking being a key component of both listening and reading comprehension. The implication of such a model is that if you address general linguistic understanding (particularly vocabulary understanding and general knowledge) and the mechanics of word recognition/decoding then reading comprehension will be enhanced (Duff & Clarke, 2011; Snowling & Hulme, 2012).

The implication of the model is that competency in both of these dimensions is necessary for functional reading to develop. Competency in either one of the two dimensions in the absence of competency in the other is not sufficient. The model can be used to generate a number of reading profiles. For example, someone who has a good understanding of language, but whose word decoding/recognition skills are weak will be compromised in his or her reading. Someone who has strong word decoding/recognition skills, but whose understanding of language is weak, will similarly be compromised in his or her functional reading. A person with weaknesses in both areas will also be

compromised. The fourth profile, a person who has appropriately developed skills in terms of word decoding/recognition and language understanding will have functionally appropriate reading skills.

3.4 An alternative 'Simple Model' of Writing

It may be the case that a mirrored construction could confer similar advantages to the understanding, assessment and teaching of written composition. A conceptual model could depict the functionally appropriate production of written language in the same way that reading is seen as the functionally appropriate understanding of written language in the Simple View of Reading. The surface plausibility of such a position makes the construction of a model of a 'simple view of writing' which directly mirrors the model of the 'Simple View of Reading', first proposed by Gough and Tunmer (1986), a feasible proposition. The author has in fact used such a construction (presented in Figure 8), albeit with caveats, to assist participants attending courses on assessment and interventions for students with delays in literacy skills development to conceptualise, assess and teach written language skills.

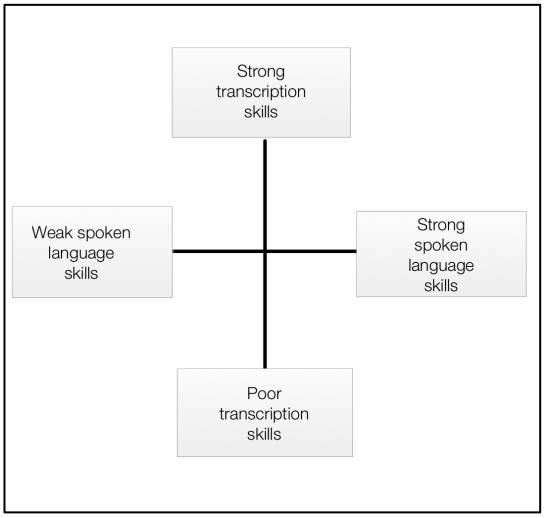


Figure 8. A 'Simple Model' of Writing.

In this model the components of written composition consists of the transcription skills of spelling and handwriting represented on one dimension, with general spoken language skills represented on the other dimension.

The model reflects the concept of the primary and naturally acquired linguistic skill of speaking preceding and contributing to the secondary taught skill of writing, linked through an integrated language system (Abbott, Berninger, & Fayol, 2010; Berninger & Abbott, 2010). In this model written composition is to a large degree the product of general expressive language skills and the mechanical skills related to transcription, differing merely in the mode of linguistic output. Though similar models representing a ‘simple’ (Juel, 1988) and ‘not-so-simple’ view of writing have been proposed (Virginia Berninger et al., 2002; Westwood, 2009), they tend to differ from this construction. They conceptualise the writing composition process as composed of two separate but complementary skills; handwriting and spelling which they call ‘transcription skills’ and the metacognitive skills involved in the planning execution and revision of expressive writing which are referred to as composition skills or ideation. These two components operate within a cognitive capacity environment composed of working memory resources and executive function efficiency (Dockrell, Marshall, & Wyse, 2015). Though linked to linguistic competencies, composition skills relate specifically to those directly utilised in the writing process such as the planning, text generating, reviewing, and revising processes of writing (Hayes & Flower, 1980). The extent to which these metacognitive language skills, which are used in the written composition

process, are related to general spoken language skills is not made clear within the models.

3.5 Potential benefits of a simplified model

One advantage of conceptualising the model in such a simple fashion is that it can be readily tested to measure the unique contribution of general spoken language skills to written composition.

In addition, the model could be used to generate a number of testable hypotheses. For example, if competencies in spoken language skills are significantly related to written composition then, in theory, instruction in spoken language skills should directly influence written language independent of specific instruction in written language skills. A similar link between targeting general receptive language skills and the subsequent impact on reading comprehension has been demonstrated (Clarke & Snowling, 2010). Direct empirical investigation of the proposition that general practice in talking, enhancement of expressive language skills, rather than talking related directly to the process of writing – talking about writing, can lead to improvement in written composition is implied by the research illustrating the link between language levels and written composition but has yet to be demonstrated at this point in time.

Potential supplementary or contextual research questions could revolve around further clarifying the relative contributory weights of the components of the transcription skills (spelling and handwriting) along with spoken language skills

to written composition at various stages of development.

If it were the case that the product of good transcription skills and good spoken language skills is functional written composition, then a model mirroring that developed to represent the ‘Simple View of Reading’ (SVR) initially proposed by Gough & Tunmer (1986) could be constructed to represent this relationship in a way that would enable students to be grouped into four categories as writers (Figure 9).

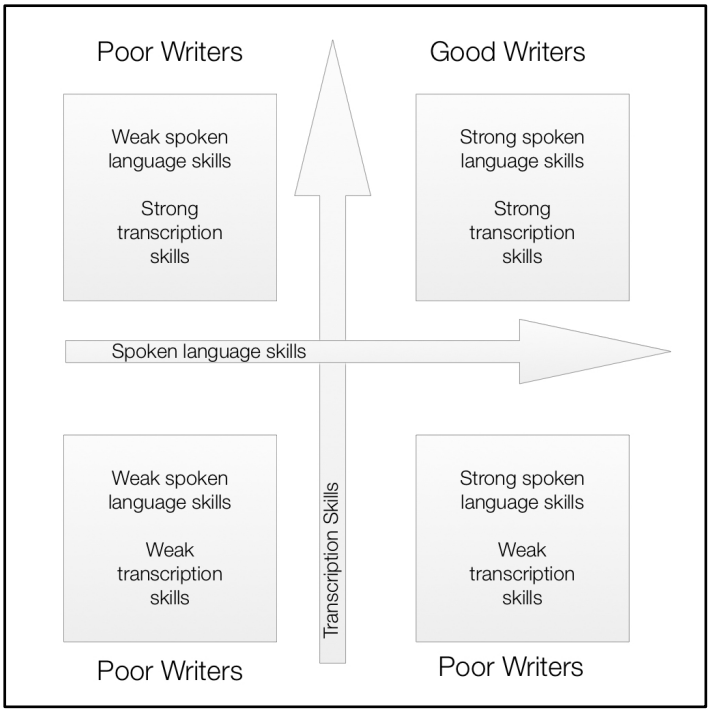


Figure 9. Proposed depiction of model for practitioner use to identify writing strengths and difficulties.

This could enhance teachers’ understanding of this area by providing a more accessible model, as they are already familiar with a similarly constructed model representing the development of reading skills.

If this simplified model of the relationship between spoken language skills, transcription skills and written composition is given empirical support through further research, this would have significant implications for the assessment of writing skills and for the development of effective teaching approaches. More substantive emphasis would be placed on the development of general spoken language skills in contributing to the process of developing writing skills. It would not discount other important contributors to the writing process, such as motivation, affective factors, the specific function or purpose of the writing, the writing environment, quality of teaching, working memory, executive functioning. However, it would envisage transcription skills and generalised spoken language skills as key competencies that drive the development of written composition. The potential benefits of this model would mirror those that have flowed from the Simple View of Reading (Gough & Tunmer, 1986, ibid) in that teachers would be able to tailor their instruction more precisely to students needs. Identifying the 'enabling' effects of well developed (automatic and fluent) transcription skills in supporting the writing process (Berninger, 1999; Graham et al, 1997; Medwell, Strand & Wray, 2009) could also lead to the implementation of more effective teaching strategies to explicitly develop these skills. An added benefit may be that the development of spoken language skills would receive more attention and be given more weight or status, not only in relation to writing skills development but in respect to broader curriculum skills, as appears to be the intention within the new National Curriculum within England (DfE, 2014). The value of being articulate may mirror the value currently placed on being literate (Goodwin, 2017).

The danger of attempting to reduce such complexity to a very simply depicted model (good spoken language skills + good spelling skills + fluent handwriting skills = good written composition) is to run the risk of overlooking or decreasing the importance ascribed to other factors that contribute to the skill of writing. Some would argue that to focus on the individual components that contribute to the writing process is a mistake and that any assessment and teaching of written composition skills must always be in context (Nutbrown, 1999; Whitehead, 2007). The same form of debate is rehearsed in relation to the simple view of reading model (e.g. the controversy regarding the government's published phonics screen DfE, 2012). This debate appears unnecessarily polarised and driven by strongly held 'hot' beliefs (Oswold, 2004; Fox, 2011). Rather than always having to be either completely within context or completely decontextualised, one could argue that any skills assessment and teaching should instead be linked to context. The proposed model would allow for this by enabling professionals to clearly identify the individual 'key' components that drive written language skills whilst allowing that the functional expression of these components lies in their embeddedness within a broader context where other factors may come into play. It would enable professionals to better clarify these broader contextual factors. What the model loses in complexity it may gain in terms of robustness, functional applicability and communicative power.

Without the generation of a strong evidence base, the question of whether the product of general spoken language skills and mechanical transcription skills could explain a significant proportion of the variation in students' written composition skills, cannot be sufficiently answered. This limits the possible

utility of such a model in supporting the understanding and practice of teachers. The amount of data required to robustly test such a proposition would generally fall within the domain of sufficiently resourced research institutions and departments. However, there is an argument to be made for practitioner psychologists conducting smaller scale empirical research to add to the collective accumulation of empirical data. This is important in two respects:

- It allows for the bridging of the gap between academic research and 'on-the-ground' understanding and practice.

- It provides an opportunity for the unique position of practitioner psychologists to influence or at least contribute to the academic debate.

Chapter 4

Context and focus of the thesis

Chapter Four outlines the focus of the current research and discusses the epistemological approach underpinning the study. The research questions informing the collection and analysis of data are also stated.

4.1 Conceptual, theoretical and epistemological framework

When considering what counts as evidence, Bloome, (2006) describes three 'problematics' (p.143). The first of these relates to the limiting nature of specific theoretical stances in framing the form of evidence sought. The second is the partial nature of any evidence, representing what Bloome describes as *'..but a moment within a social and communicative event(s) itself that is inherently partial, belonging only in part to the researcher' (p.144*). The third 'problematic' relates to the loss of the essence of the original when it is translated or represented.

The shared externalised or symbolic representation of thoughts via the medium of spoken and written words is a socially constructed phenomenon and it would be possible to explore the use of a social constructionist epistemological stance to investigate the sense that people make of spoken and written communication. However, though valuable, this approach is beyond the scope of this piece of work. Whilst acknowledging the inevitable limitations inherent in the use of an empirical methodology (see `Bloome's 'problematics' above), the approach taken within this research is informed by a largely pragmatic critical

realist epistemology (Smail, 2005). The critical realist stance in regard to this particular research would recognise the limitations of uncritically viewing an individual's performance e.g. spelling skills, spoken language skills etc. as though they were objective 'things', but would proceed on the basis that there is a legitimate phenomena to explore, though our understanding of it will always be partial or imperfect. The 'pragmatic' element of this critical realist approach is based upon the desire to reduce the number of individuals who fail to adequately develop spoken and written language skills and are therefore at a significant disadvantage. Though this may be a socially constructed disadvantage, linked to culturally specific factors, bound by time, culture and context it nevertheless has a material impact on the life chances of individuals within this society.

The possibility of confirmation bias (Kahneman, 2011) needs to be guarded against when conducting research. Awareness of any potential influences assists in guarding against the intrusion into either the framing of the research question and/or the analysis and interpretation of any data. In this particular case the background of the researcher has led to a strong belief in the value of teaching spoken language skills. The construction of the Simple Model of Writing which is being proposed, whilst representing a perfectly legitimate research question, reflects a potential for bias in this respect. The researcher has borne this in mind throughout, particularly in regard to analysis and reporting of data where a robust blind second marking system was used to moderate the scoring of participants' samples of spoken and written skills has been used (p.84).

4.2 Context and Objectives of the Research

The aim of this research is to investigate the plausibility of a parallel model to that representing the Simple View of Reading (Gough & Tunmer, 1986) in illustrating and describing the relationship between the key component skills which contribute to written composition skills. It extends the research carried out by Kim et al (2011), which focused on children at the beginning of their educational career and complements that carried out by Connelly et al (2012) which investigated the contribution of oral language, spelling and handwriting within the context of 'language bursts' (Hayes, 2012). This research aims to add to the field by investigating the applicability of an alternative construction of a 'Simple View of Writing' model with data collected from a group of 74 Year 5 (age 9-10) students. In line with the proposed Simple Model of Writing being explored (Fig. 2, p.15), the independent variables in the current study are 'transcription skills' (comprised of spelling and handwriting), and 'spoken language skills'. Tests used in data collection were chosen to provide comparable measures of participants' skills on these elements (see method section for details). The dependent variable is 'written composition' which, in this instance, refers to the overall quality of language used. The method of scoring the participants' written composition was chosen specifically to focus on the overall quality of the language used within the composition (as measured by the written paragraph Holistic scoring criteria, Wechsler, 2005, see figure 12, p.80). The analysis of the data is of a cross-sectional correlational design and will be using a regression model.

4.3 Terminology

The terms ‘oral language’ or ‘oral language skills’ are typically found within extant research. These often refer to the ability to understand spoken language, (receptive language skills), rather than the ability to use spoken language, (expressive language skills). Within the proposed Simple Model of Writing the term ‘spoken language skills’ refers exclusively to expressive language skills.

4.4 Research aim and questions

The aim of this research is to investigate the plausibility of a proposed ‘Simple Model of Writing’ in depicting the relationships between spoken language skills, transcription skills and written composition in a cohort of Year 5 students.

This aim will be addressed through the exploration of the following key research hypotheses and questions:

Key Hypotheses

1) There will be no statistically significant relationship between spoken language skills and transcription skills.

2) Spoken language skills will predict the quality of written composition when spelling and handwriting skills are statistically controlled for.

3) Transcription skills will make a statistically significant unique contribution to written composition when spoken language is statistically controlled for.

With further insight being added through the exploration of a number of supplementary research hypotheses/questions:

Supplementary research hypotheses/questions

SH1) There will be a statistically significant relationship between exposure to speaking and writing activities outside of the school context and the development of written composition and/or spoken language skills.

SH2) There will be a statistically significant effect of gender on written composition.

SQ1) Do the ipsative profiles of the participants reflect any consistent pattern of relative strengths or weaknesses across the cohort in one or other of the four skills sampled (handwriting, spelling, spoken language, and written composition)? For example, is written composition found to be a consistent weakness when compared to the other skills? Or is spoken language perhaps a consistent strength etc.?

SQ2) What is the relationship between oral fluency (as a proxy for working memory – see Rende, Ramsburger, & Miyake, 2002; Rosen & Engle, 1997; Daneman, 1991) and written composition?

Chapter 5

Method

Chapter Five provides a detailed description and explanation of methods used to explore the research questions for this study. This includes details of the research design, details of the participants and schools (including how they were recruited), the process of data collection (including the procedures and tasks used), the scoring procedure, and how ethical considerations were addressed.

5.1 Design

The design of the research study is 'explanatory' in the way described by Robson (2002).

Explanatory Research

- Seeks an explanation of a situation or problem, traditionally but not necessarily in the form of causal relationships.
- To explain patterns relating to the phenomenon being researched.
- To identify relationships between aspects of the phenomenon.
- May be of flexible and/or fixed design.

Figure 10. Robson's description of explanatory research (2002, pp. 59 - 60)

This description of explanatory research fits with the critical realist stance in that there is a phenomena to investigate but that our understanding of it is imperfect and can only proceed by sufficient repeated explorations, descriptions and explanations such that a reasonable consensus emerges over time (Scott, 2005). The independent variables in the current study are 'transcription skills' (comprised of spelling and handwriting), and 'spoken language skills'. The dependent variable is 'written composition' (as measured by the written paragraph Holistic scoring criteria, Wechsler, 2005, see figure 12, p.80). A correlational design will be used to explore the relationships between these variables.

5.2 Participants

Year 5 pupils were chosen because at their age and stage in education the transcription skills of handwriting and spelling should be sufficiently practised to allow for differential development of these skills to be analysed as a factor within the data (Berninger & Abbott, 2010; Abbott & Berninger, 1993). Demographic data was collected in relation to ethnic background, gender, English as an Additional Language (EAL), and special needs status.

To recruit the participating schools, the researcher consulted informally with the head teachers of five primary schools within a group of schools he supported as an Educational Psychologist within an Outer London Borough. The purpose of the research was described, along with the data collection procedures and processes. The ethical, participant recruitment, data protection, and confidentiality arrangements, as had been approved by the University of East

London ethics committee, were shared. Each head teacher was invited to contact the author if, after consultation with relevant staff and governors, they wished to participate in the research. The head teachers of two of the primary schools subsequently contacted the researcher expressing a wish to participate.

5.3 School characteristics

School One was a three-form entry community primary school with a mixed socioeconomic intake. Verbal information shared by the head teacher was that the majority of the children within the school community came from families who owned their own home in a relatively affluent area, with a significant minority coming from a nearby local authority housing estate (though a proportion of homes on the estate were privately owned). Fifteen per cent of the sample (8 of the participants) were registered for free school meals (a measure commonly used by the education department, schools and local authorities as an indicator of relative poverty). Whilst the ethnic mix within the lower year groups within the school population was changing rapidly because of recent demographic trends in the local area, the Year 5 cohort taking part in the study were predominantly white British. Four per cent (2 of the 50 participants – n = 50 for school one) had different ethnic backgrounds, one Asian Japanese/white British heritage and one Black African heritage; both students were born in this country. The gender balance was 56% males to 44% females. One of the participants was on the school's SEN register in relation to significant delays in language and learning. She was supported in completing the tasks, in line with the other participants (see Table 2 for summary).

The school had been rated as outstanding in two previous OFSTED inspections. Following national concerns (DfE, 2012) and guidance from the latest OFSTED inspection report a recent focus in the school concerned improving extended writing, particularly in the Year 5 and 6 cohorts.

School Two was a voluntary aided Roman Catholic church school with a one form entry. The demographics of the school reflected the congregation of the local catholic community, which included a greater number of families with a black African heritage. Forty-six per cent (11) of the participants had ethnic backgrounds other than white British. Nine were of black African heritage and two from Afro-Caribbean heritage. All had been born in this country. None of the participants in School Two were registered for free school meals. The head teacher felt that the free school meals take-up figure was slightly misleading, reflecting the culture of the parent group. She was aware of several families who would be in a position to claim free school meals, but who chose not to pursue this course. The gender balance was 46% males to 54% females (n = 24 see Table 2).

The school had been rated as ‘outstanding’, and then ‘good with outstanding features’ on the last two OFSTED inspection reports. As with School One, there was a focus on improving extended writing within the upper part of the school with a view to improving performance/results on Key Stage 2 assessments.

Table 2

Demographic details of participants.

Category	School One (n = 50	School Two (n = 24)	Combined (n = 74)
Male *n* = 39	46%	54.2%	52.7%
Female *n* = 35	54%	45.8%	47.3%
White British *n* = 61	96%	54.1%	82.4%
Black African *n* = 10	2%	37.5%	13.5%
Afro-Caribbean *n* = 2	0%	8.3%	2.7%
Asian *n* = 1	2%	0%	1.4%
Free School Meals N = 7	15%	0%	10.4%
Mean Age	9:08	9:07	9:08

5.4 Recruitment of participants

Participants were recruited via a letter of invitation sent home with each student following explanation of the project by the class teacher. The letters, (one seeking parental permission, and one addressed directly to the student; see Appendix A), had been approved by the ethics committee of the University of East London. The information contained within the letters of invitation/permission described the area to be investigated by the research, the nature of the tasks to be completed by participants, the confidentiality and data

protection arrangements, and the procedure to be followed if anything significant and not already known to the school staff (regarding an individual's skills/attainments) emerged from the process. This included an opportunity for direct feedback from the author if desired. The invitation letters included a positively framed/worded option for declining participation in the research. The letters were given out on Monday, with students encouraged to bring the letters back by the end of the week. On the Monday of the following week the class teachers gave a reminder prompt where appropriate, with the deadline for any returns being the Friday of that week. From a total of 84 invitation letters in School One, eleven responses were returned declining participation and there were 20 non-responses leaving a total of 53 participants. Discussion with the class teachers suggested that there was no particular pattern in terms of socio-economic, gender or ethnic factors linking the non-responders but that this return reflected a typical pattern of response from the current parent group to letters sent home from school. However, the majority (12) of the non-responses came from one class group where the teacher appeared less invested in the research than the other two teachers. Though speculative, it may be that he was less vigilant in reminding students to return their letters.

In School Two there were a total of 29 invitation letters eliciting 28 positive responses and 1 non-return, leaving a total of 28 participants.

5.5 Participant attrition

Of the 81 original respondents 7 were unable to complete the full suite of assessments. Two respondents from School One moved out of the area and

one was absent with an extended illness. Two respondents from School Two were absent with extended illness and two (twin brother & sister) went on extended leave to a family event in Ghana. Therefore the number of participants who accepted the invitation was 81, and the number who completed the tasks was 74. The sample size (N=74) fits with Green's (1991; cited in Field, 2009) minimum recommended sample size for a regression analysis of 50 + 8k, where k is the number of predictors.

5.6 Data collection procedure

Data was collected on the handwriting speed, spelling accuracy, spoken language and written composition of 74 Year 5 pupils in 2 primary schools (age range 9 – 10). Assessments were completed in School One during the course of the Autumn Term 2013 and in School Two in the Spring Term of 2014. The timing was primarily a pragmatic decision, given the opportunities of the author to fit data collection in around the demands of his full-time job as an Educational Psychologist. Given the ipsative nature of the exploration, this was not considered to be a crucial issue. Some of the data was gathered via group-based administration of the assessment tasks (written composition and handwriting) whilst data for spelling and spoken language was not suitable to be administered to a group and was therefore collected via individual interview.

5.7 Task administration procedures

Before the administration of the tasks, in both the group and individual settings the participants were thanked for their help in the study and were given a reminder of the purpose of the study/research. "Today we're going to complete

a number of tasks. The reason we're doing the tasks is so that we can investigate the links between speaking and writing. We're really pleased that you are helping us with this investigation, thank you. Though the tasks might feel a bit like tests we're not testing you. The tasks are there just as a way to get samples of your skills in handwriting, spelling, speaking and writing to help us with our investigation. This research that you're helping us with will help your school and other schools to understand more about the best way to teach writing skills. Do you have any questions you'd like to ask before we begin?"

A small range of questions were asked by students when in the group task completion setting. These were related primarily to procedural issues e.g. “Can we use pens?”, “Do we have to use our best handwriting?”, “What do we do when we’re finished?” Participants were told that they could use pens if they wished, that handwriting had to be clear enough so that another person could read it, and that when they were finished the writing task they should sit quietly until the whole group had finished the task. Within the individual task completion setting, the questions related to asking for permission to give character names when in the Visual Passage Retell and Giving Directions tasks from the Oral Expression subtest (see description of tests in section 5.9).

Individual task instructions were administered in accordance with the instructions contained within the test manuals. The group-administered tasks took around 20 – 25 minutes to complete. The individually administered tasks took around 20 – 30 minutes (depending on the level of detail participants put

into the oral responses and how far they progressed through the word spelling test before meeting the discontinuation criteria).

Group administered tasks were completed within the participants' classroom with participants distributed around the classroom so as not to be overly affected by other participant's responses to the task. Individual tasks were completed in quiet areas adjacent to the participants' classroom.

5.8 Task order

The handwriting fluency task (Barnett, Henderson, Scheib, and Schulz, 2007) and the written expression task (Wechsler, 2005) were completed via group administration, with the Oral Expression and Spelling tasks (Wechsler, 2005) completed via individual interview in alternating order within the split task elements completion. In order to control for order effects in regard to task presentation/completion (within the restrictions of the school context within which the participants were being taught e.g. fitting around the timetable and daily organisational arrangements of individual teachers/classes) the participants were split into eight groups. Two groups per class group equalling eight groups in total. Allocation of individual participants to groups was balanced as much as possible along gender lines, but was dependent on specific class group organisation (e.g. groups of students going off to music or other split class activities). Figure 11 outlines the arrangements for task order presentation and completion:

Class	Group	Order of Task Presentation	
Class 1	1	Handwriting & Written Expression	Spelling & Oral Expression (Individual Interview)
	2	Oral Expression & Spelling (Individual Interview)	Written Expression & Handwriting
Class 2	3	Spelling & Oral Expression (Individual Interview)	Handwriting & Written Expression
	4	Written Expression & Handwriting	Oral Expression & Spelling (Individual Interview)
Class 3	5	Spelling & Oral Expression (Individual Interview)	Handwriting & Written Expression
	6	Written Expression & Handwriting	Oral Expression & Spelling (Individual Interview)
Class 4	7	Spelling & Oral Expression (Individual Interview)	Handwriting & Written Expression
	8	Written Expression & Handwriting	Oral Expression & Spelling (Individual Interview)

Figure 11. Order of task presentation. Full range of tasks was completed with one group before moving on to the next group.

5.9 Measures

Handwriting

The handwriting measure was based on a task used in a number of studies (Berninger, 1999; Berninger, Mizakawa, & Bragg, 1991; Connelly, Campbell, MacLean, & Barnes, 2006; Connelly, Dockrell, Walter & Critten, 2012) and taken from the Detailed Assessment of Speed of Handwriting (Barnett, Henderson, Scheib, and Schulz, 2007). The task requires respondents to write out the letters of the alphabet in lowercase in order as quickly as possible in one minute. Letters are counted towards the total letters per minute score if they are in correct alphabetical order and are legible enough such that the

examiner could recognise them individually outside of the specific context. The task is reported to have a very high interrater reliability (r = 0.99) and conforms to psychometric standards of reliability and validity (Barnett, Henderson, Scheib, & Schulz, 2009).

Word spelling skills, spoken language skills and written composition

Samples of these skills were collected using tasks taken from the Wechsler Individual Achievement Test-II ^{UK} (Wechsler, 2005*).* Sub-tests from the assessment tool have been used in a number of studies within this field (Berninger & Abbott, 2010; Abbott, Berninger, & Fayol, 2010) and conform to psychometric standards of reliability and validity (Wechsler, 2005).

Word Spelling

The participants are asked to spell a series of dictated words. The participants are told the target word and then the word is included within an example sentence. The inclusion of homophones (words that sound the same, but are spelt in different ways and have different meanings e.g. ‘chord/cord’, ‘there/their/they’re’) requires the respondent to use the context clues provided by the dictated sentences in order to identify the correct spelling of a word. The test continues until the participant reaches the discontinuation criteria (6 consecutive mistakes). Words are scored as correct or incorrect. Raw scores were then used in the regression analyses. Standard scores for age, which are available in the test manual only, were used in the ipsative analysis (p. 101). The reliability coefficients for the spelling tasks range from .93 to .96 (Wechsler, 2005).

Spoken Language Skills

Spoken language skills were assessed using the WIAT II Oral Expression. The subtest is based on three tasks: 1) Oral Word Fluency, 2) Giving Directions, and 3) Visual Passage Retell. The sum of the scores on all three elements is needed to calculate the overall Oral Expression score (Wechsler, 2005).

For Oral Word Fluency, the child generates words orally and quickly in a designated semantic category. In Word Fluency A the respondent is asked to name as many different animals as they can in one minute. In Word Fluency B the respondent is asked to describe as many different ways as possible for moving from one place to another. Points are given for each method of moving that includes a unique verb e.g. ‘drive a car’. Variations on a verb e.g. *drive a car, drive a bus, drive a lorry,* would be awarded 1 point as they are all variations of the verb drive. The total score for Word Fluency is the sum of the scores for Word Fluency A and B.

For Giving Directions, the child describes a sequence of steps necessary to complete a familiar action or task designated by the examiner. For the first of two trials, describing the sequence of actions required to purchase a snack from a vending machine, the respondent is provided with a sequence of picture cues. For the second trial the respondent is provided with a verbal prompt only, being asked to describe how to make a sandwich with specified ingredients.

For Visual Passage Retell, for two separate trials the respondent looks at a series of cartoon pictures and tells a story about them, which is scored for detail

and accuracy in depicting the content of the pictures in sequence.

Raw scores for the combined total from all three elements were used in the regression analyses. Standard scores for age, which are available in the test manual only for summary scores based on all three tasks, were used in the ipsative analyses. The reliability coefficients for the Oral Expression tasks range from .83 to .89 (Wechsler, 2005). Examples of the scoring criteria applied to participant responses are included in section 5.10.

Written Composition

Written composition was assessed using the WIAT II Written Expression Subtest. This subtest includes three written expression tasks. For Written Word Fluency, the child generates as many words as possible within a given time limit (one minute) for a designated category (things that are 'round'). For Sentence Combining, for several separate trials the child combines two or three separate sentences to create one new sentence with the same meaning. For Paragraph Writing the child writes a paragraph in response to a prompt, 'My favourite game is….' within a given time limit (up to 10 minutes). Raw scores using the Holistic scoring criteria for the written Paragraph task (Wechsler, 2005) were used in the regression analysis. The Holistic scoring criteria focuses on the quality of the linguistic content of the composition e.g. clarity, organizational structure, descriptive detail, and vocabulary use/range. The scoring criteria for the paragraph ranges through a scale-spanning zero to six. A score of zero is defined as *'Demonstrates no relationship to the prompt' (Wechsler, 2005, p.40).* A score of six is defined as; *'Well written and presents* ***clear, organized, and***

developed descriptions *of the topic. The ideas and details are* ***clarified and related through the use of effective transitions****, resulting in an overall sense of the subject. Effectiveness is enhanced through the use of vivid imagery' (Wechsler, 2005, p.40).* Standard scores for age, which are available in the test manual only for summary scores based on all three tasks, were used in the ipsative analyses. The reliability coefficients for the three Written Expression tasks range from .81 to .87 (Wechsler, 2005). Examples of the scoring criteria applied to participant responses are included in section 5.10.

Exposure to speaking and writing activities outside of the school context

When they were in the previous academic year (Year 4) a number of participants in School One (*n* = 27) completed the National Literacy Trust's annual literacy survey. Amongst other things, the survey captures data regarding students' attitudes towards and engagement with talking and writing activities. The 'Average Exposure to Writing' element was calculated from the responses to three probe questions: *'on a scale of 1 – 10, how much do you enjoy writing'; 'On a scale of 1 – 10, how good a writer do you think you are?'; 'How often do you write outside of class?'.* In response to the latter question respondents were asked to choose one of seven descriptive terms; never, rarely, about once a month, a few times a month, about once a week, a few time a week, every day or almost every day. For the purposes of creating a numerical data point the responses were coded from 1 to 7 (least to most). The participants' score on the responses related to their enjoyment of writing, their judgement of their writing skills, and how often they wrote were added together to give a composite numerical score reflecting the strength of these factors.

These factors are reported to be closely associated with children's progress with written skills development (Clark, 2015).

The 'Average Exposure to Speaking' factor was calculated from responses to two probe questions. The first related to participants' confidence in speaking and was a sum of the responses to three specific questions; 'How confident are you in putting up your hand in class, joining in class discussions, and speaking in front of a group. For each of these questions the respondents were asked to rate their confidence on a descriptive scale of four points ranging through; not at all confident, not too confident, confident, very confident. For the purposes of creating a numerical data point the responses were coded from 1, not at all confident to 4, very confident. The second factor related to how often the respondents talked with their families at mealtimes. The possible responses ranged across seven descriptors ranging through: never, rarely, once a month, a few times a month, once a week, a few times a week, every day. For the purposes of creating a numerical data point the responses were coded from 1 to 7 from least to most. An overall score was generated by adding the scores for participants' rating of their confidence in speaking and the frequency with which they participated in conversations within the family. Clark (2013) reports a link between the frequency of speaking within the family and student's confidence and school performance in speaking.

5.10 Scoring moderation process

The scoring of responses to the handwriting, spelling, oral expression and written expression tasks were conducted in accordance to the scoring criteria

contained within the relevant test manuals. Raw scores and equivalent standard scores for the spelling and handwriting tasks were double checked for accuracy by the researcher and a colleague who was a qualified educational psychologist. The Holistic scoring criteria for the written paragraph task (Wechsler, 2005) and the scoring criteria for several of the Oral Expression tasks (Wechsler, 2005) requires the marker to apply a degree of interpretation and judgement. In order to check for accuracy of scoring on these elements a stratified, semi-random sample of the written expression and Oral Expression responses were blind double marked. The initial (first marker) scores for each element were stratified into three bands (low, middle, high). From each band 7 responses were chosen, at random, to be second marked. This represented approximately one third of the total sample. The oral language responses were already in typewritten form and in addition the participants' written responses were typed and misspellings were corrected to avoid presentation influencing the second markers judgements of quality of language used. Two colleagues, both experienced educational psychologists, who were very familiar with the assessment tools, completed the second marking. Interrater reliability was calculated separately for oral and written language samples. Following Kim, Al Otaiba, Wanzek, & Gatlin (2015), a reliability coefficient was calculated by dividing the number of agreements by the number of agreements plus disagreements. Where there was a discrepancy this was clarified via discussion between the three markers and a final score agreed on. There was an initial interrater reliability coefficient of 0.78 for the Oral Expression samples, rising to 0.85 following further discussion as part of the moderation process. The initial interrater reliability coefficient for the Written Expression samples was 0.75,

rising to 0.82 again following the moderation process. These final coefficients fall within the reliability ranges quoted in the manual (Wechsler, 2005)

Examples of the scoring criteria applied to participant responses:

The following Holistic Criteria were used to score the paragraph writing samples:

Holistic Scoring Criteria for Paragraphs

Score	Response
6 points	Well written and presents **clear, organised, and developed descriptions** of the topic. The ideas and details are **clarified and related through the use of effective transitions**, resulting in an overall sense of the subject. Effectiveness is enhanced through the use of vivid imagery.
5 points	Presents a **substantial amount of descriptive and varied detail** of the topic. The ideas and details are **clarified with several descriptions or through elaboration.** Features are related to each other or to the whole. Organisation is weak but several ideas are clarified with added details, or organisation is clear but the ideas are less well developed.
4 points	Generally well written and contains a **moderate amount of description** of the topic. The ideas or activities are related to each other or to the main idea. **Mentions a few activities** that the examinee enjoys and **adds clarifying descriptive details to each** activity. **Mentions several activities** but **clarifies only a few** of the activities **with several added details.** Organised around a single activity that the examinee enjoys with a moderate amount of description about the activity.
3 points	Contains a **limited amount of description** of the topic. The ideas or activities are related to each other or to the main idea. **Mentions a few activities** that the examinee enjoys and **clarifies** many of the activities **through additional descriptive details.** **Mentions several activities that are related to each other or to the whole,** some of which are **clarified through an additional detail.**
2 points	Contains a **minimal amount of description** of the topic with a **few activities** that the examinee enjoys and **clarifies through additional descriptive details of at least one of the activities.** **Mentions a single activity** and provides **a few descriptive details** about the activity.
1 point	Indicates that the examinee attempted to respond to the prompt with a coherent **listing of one or more general activities** (e.g., play games, play outside). There is **no attempt to further clarify with additional descriptive details.**
0 points	Demonstrates no relationship to the prompt.

Figure 12. Holistic scoring criteria for paragraph (Taken from Wechsler, 2005, p.40)

The written paragraph (Figure 13) received a score of 2 as it was judged to have met the relevant criteria; *'**Mentions a single activity** and provides **a few descriptive details** about the activity' (Wechsler, 2005, p.40).*

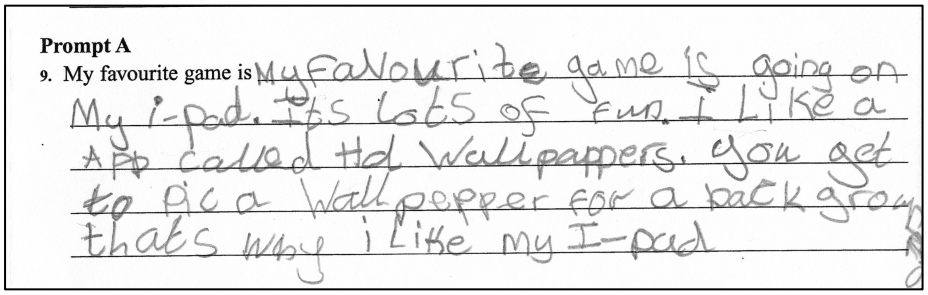

Prompt A
9. My favourite game is My favourite game is going on My i-pod. Its lots of fun. I like a App called Hd Wallpappers. you get to pic a Wallpepper for a back grou thats why i like my I-pod

Figure 13. Example of a participant response to the Paragraph Writing prompt (1 of 2).

The written paragraph (Figure 14) received a score of 5 as it was judged to have met the relevant criteria*; 'Presents a* ***substantial amount of descriptive and varied detail*** *of the topic. The ideas and details are* ***clarified with several descriptions or through elaboration'*** *(Wechsler, 2005, p.40).*

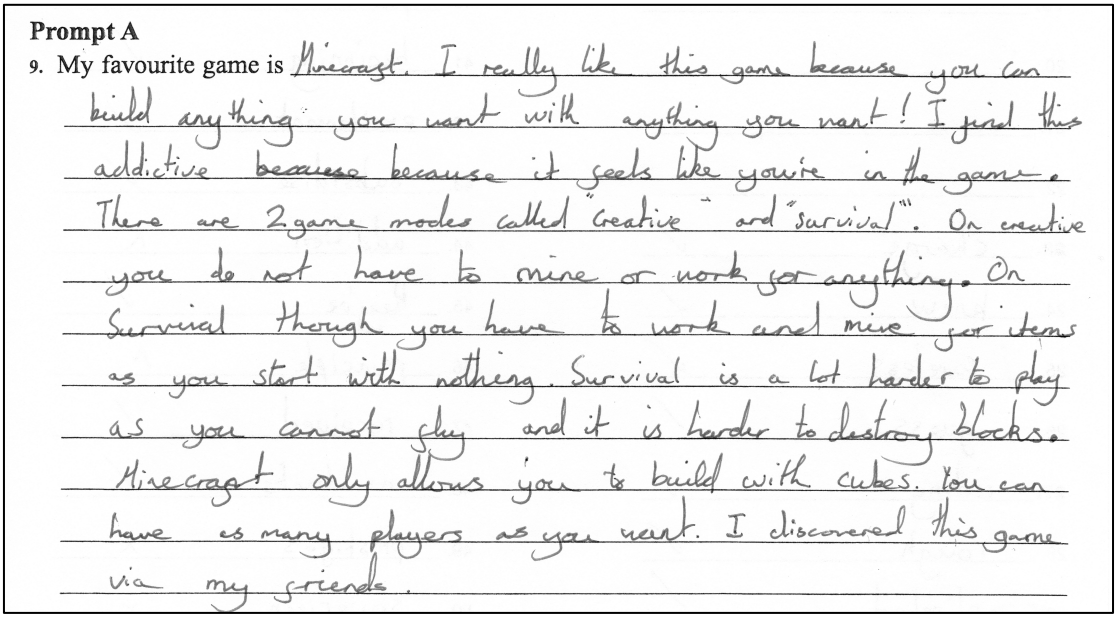

Prompt A
9. My favourite game is Minecraft. I really like this game because you can build anything you want with anything you want! I find this addictive because because it feels like you're in the game. There are 2 game modes called "creative" and "survival". On creative you do not have to mine or work for anything. On Survival though you have to work and mine for items as you start with nothing. Survival is a lot harder to play as you cannot fly and it is harder to destroy blocks. Minecraft only allows you to build with cubes. You can have as many players as you want. I discovered this game via my friends.

Figure 14. Example of a participant response to the Paragraph Writing prompt (2 of 2).

Oral Expression responses were transcribed and scored in line with the criteria in the manual (Wechsler, 2005). For illustrative purposes two examples are reported below. One is a response to one of the Visual Passage Retell prompts

(Figure 15), and the other (Figure 17) a response to one of the Giving Directions prompts.

> Three boys one day went to a theme park where they buyed tickets to go on the biggest roller coaster in the theme park. One boy was so scared, he didn't even want to go on the ride but his friends were very, very excited. But when the ride started his two other friends started to yell and cry. But then the boy who said he didn't want to go on there started to have as much fun as all the other people who went on there. After, after the ride erm the two boys felt so sick they had to go home and have a lot of water. But the boy enjoyed the ride and stayed for the rest of the day.

Figure 15. Example of a participant response to the 'Visual Passage Retell' Prompt.

Applying the scoring criteria (Figure 16) the response achieved a score of 12.

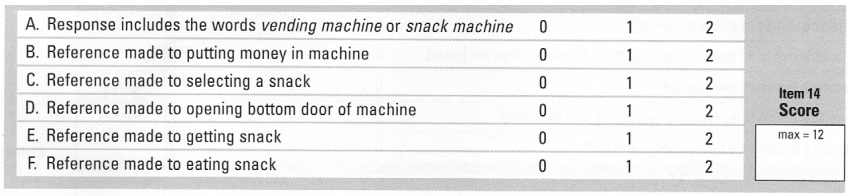
11. Scoring Rubric	No Evidence	Evidence	Skilled	
A. Explains what the story is about (**main idea**)	0	1	2	
B. States **details** about the pictures	0	1	2	
C. Labels characters (**names**)	0	1	2	
D. Describes or tells where story occurs (**setting**)	0	1	2	
E. Tells what happens or what is happening (**plot**)	0	1	2	
F. Relates a logical order of events (**sequencing**)	0	1	2	
G. Summarises and/or states a final outcome (**conclusion**)	0	1	2	Item 11 Score
H. **Predicts** what might happen next	0	1	2	max = 18
I. **Compares** story to own experiences or to another story	0	1	2	

Figure16. Scoring criteria for Visual Passage Retell (item 11) taken from response booklet (Wechsler, 2005).

> First put 50p into the vending machine, then underneath the snack there are two, two or one number. Tap the number in the, on the vending machine then the snack will fall urm, from it's clutches and come down and then you, you shall, you can open the urm where it says open and grab your snack and then you can eat your snack.

Figure 17. Example of a participant response to the 'Giving Directions' Prompt (Vending Machine).

Applying the scoring criteria (Figure 18) the response achieved a score of 8.



A. Response includes the words *vending machine* or *snack machine*	0	1	2	
B. Reference made to putting money in machine	0	1	2	
C. Reference made to selecting a snack	0	1	2	Item 14 Score
D. Reference made to opening bottom door of machine	0	1	2	
E. Reference made to getting snack	0	1	2	max = 12
F. Reference made to eating snack	0	1	2	

Figure18. Scoring criteria for Giving Directions (item 14) taken from response booklet (Wechsler, 2005).

5.11 Gathering Participant's views

Following informal conversations with participants in School One prior to completion of the individually administered tasks a small number of the participants, whose interviews fell towards the end of the data collection phase for the school, speculated as to whether their writing skills would be stronger than their spoken language skills or vice-versa. Though not a key element in the exploration of the proposed model, information regarding the participant's predictions of their comparative competencies in speaking and writing was considered to be potentially valuable and of interest. In the subsequent phase of data collection in School 2 views of the participants (n = 24) in relation to their views on which, if either, of the two modes of expression would be stronger for them was collected. They were also asked what their views were on the issue. Did they think that spoken language and written language skills were the same or different? Discussion of the responses is covered in Chapter 7 (p.104).

5.12 Ethical considerations

Letters were sent to the parents of all of the pupils asking for their permission for their child's participation in the study which was described as an investigation of the links between oral and written skills (see Appendix A).

Parents were given the opportunity to withdraw their child from the study up to the point of the individual interview and to ask for withdrawal of data up to the point when the data was analysed. No such requests were received. Parents were informed that if the data collected identified any significant issues that had not previously been identified by the school, both parents and school staff would be informed and offered a meeting with the researcher. No such discrepancies emerged from the data collection process. All of the data collected from the participants was anonymised within the analysis, with individual participants being referred to by a numerical label only within the database. The schools were also referred to by use of a numerical label only. The source data was stored in a secure school environment with individual names or identifying information redacted and replaced with numerical labels as stated above. The redaction was done before the source data was taken away from the school. The Head teacher(s) and class teachers were left with the key linking the numerical labels to student names. Any data, either electronic or paper based, taken away from the interviews by the researcher contained numerical labels only. If participant identification is required beyond that point in time, the researcher had to request this from the Head teacher. Following description and analysis of the data sufficient for thesis submission (following agreement with the Doctoral supervisor) the source data will be returned to the schools for their records if requested, or will be disposed of as confidential waste if not requested (as outlined in Appendix A).

All interviews with participants were held in settings within the school that were overlooked by staff. With the exception of the oral expression and spelling

tasks, which require individual administration, tasks were administered using small group assessment activities rather than via individualised assessment interviews.

Chapter 6

Results

6.1 Overview

The results chapter will present the findings of a series of statistical analyses conducted in order to explore the research questions of this study. The research aims and questions (including supplementary questions) are introduced in section 6.2. Following this there will be sections describing the treatment of data collected (6.3), an outline of the analytic strategy applied to the data (6.4) and a statement of findings relating to each research question (6.5). Finally a summary of results will be provided (6.6).

6.2 Restatement of research aim and questions

Research aim and questions

The aim of this research is to investigate the plausibility of a proposed 'Simple Model of Writing' in depicting the relationships between spoken language skills, transcription skills and written composition in a cohort of Year 5 students.

This aim will be addressed through the exploration of the following key research hypotheses and questions:

Key Hypotheses

1) There will be no statistically significant relationship between spoken language skills and transcription skills.

2) Spoken language skills will predict the quality of written composition when spelling and handwriting skills are statistically controlled for.

3) Transcription skills will make a statistically significant unique contribution to written composition when spoken language is statistically controlled for.

With further insight being added through the exploration of a number of supplementary research hypotheses/questions:

Supplementary research hypotheses/questions

SH1) There will be a statistically significant relationship between exposure to speaking and writing activities outside of the school context and the development of written composition and/or spoken language skills.

SH2) There will be a statistically significant effect of gender on written composition.

SQ1) Do the ipsative profiles of the participants reflect any consistent pattern of relative strengths or weaknesses across the cohort in one or other of the four skills sampled (handwriting, spelling, spoken language, and written composition)? For example, is written composition found to be a consistent weakness when compared to the other skills? Or is spoken language perhaps a consistent strength etc.?

SQ2) What is the relationship between oral fluency (as a proxy for working memory – see Rende, Ramsburger, & Miyake, 2002; Rosen & Engle, 1997; Daneman, 1991) and written composition?

6.3 Treatment of data

Upon completion of the data collection phase, data for each participant (n = 74) was entered into SPSS for analysis (v.24; all outputs related to analyses conducted can be found in Appendix D). The raw scores were used for the multiple regression analyses. The holistic scoring criteria (in line with procedures outlined in the WIAT manual, Wechsler, 2005) was used as the representative raw score for writing (following Connelly, Dockrell, Walter, & Critten, 2012). Participants' standard scores on the WIAT (Wechsler, 2005) and DASH Alphabet Writing Task (Barnett, Henderson, Scheib, & Schulz, 1997) were used for analysis of ipsative profiles (Berninger & Abbot, 2010). For those participants in school One who had completed the 'exposure to literacy activities outside of school' survey raw scores were calculated for average exposure to reading and writing activities based on the participants' responses to the questions probing for that information.

6.4 Analytic strategy

Pearson product-moment correlation coefficients (two-tailed) were chosen to conduct an initial exploration of the relationships between the key variables in the proposed Simple Model of Writing: speaking, spelling, handwriting and writing quality. In addition to these variables, oral fluency was included. This

was to explore potential relationships between this additional factor and the key variables. The Word Fluency element of the Oral Language task (the speed at which participants could retrieve and articulate items within a specified semantic category and timeframe) was included because performance on verbal fluency tasks are considered to be affected by working memory (Rende, Ramsburger, & Miyake, 2002; Rosen & Engle, 1997; Daneman, 1991) and therefore could serve as a potential proxy for this factor in the absence of a specific working memory measure. Working memory is posited to be an important cognitive structure or process linked to writing quality (Hooper et al, 2011; Berninger et al, 2010).

In all cases, additional analyses were included to ensure no violation of the assumptions of linearity, normality, homoscedasticity and multicollinearity (Field, 2009) (see SPSS outputs in Appendix D). The analyses also screened for outliers. No data points needed to be removed.

Following exploration of the initial correlations, a hierarchical multiple regression analysis was used to identify the unique contribution of spoken language skills to writing quality. The analysis accounted for the effects of transcription skills (spelling and handwriting).

This analytic strategy was considered appropriate as related theory and research has suggested potential relationships between the individual variables being explored in the present study and written composition (Berninger & Abbot, 2010; Kim et al, 2011; Arfe, Dockrell, & De Bernardi, 2016). However,

the nature of these relationships are still to be further explored. Multiple regressions that include correlation coefficients facilitate both the identification of relationships between variables as well as prompting the exploration of interrelationship among variables (see Field, 2009).

The relationship between out of school exposure to speaking and writing activities and subsequent performance on the Oral Expression and Written Expression tests (SQ1) was statistically explored through the use of a Pearson's correlation. The supplementary research question regarding the potential effect of gender on writing quality (SQ2) was explored through the use of a t-test. Ipsative profiles for SQ3 consisted of descriptive statistics generated by the standard score data which was then compared and discussed (further detail provided in section 6.5). The relationship between additional factor of oral fluency and writing quality (SQ4) was statistically explored in the Pearson's correlation conducted in the initial exploration.

The participant's standard scores for alphabet writing, spelling, spoken language and written language were used to check for any consistent pattern of relative strengths or weaknesses in any of these elements across the group. This was done by taking each participant's standard scores for the four elements and calculating their average standard score. The individual standard score for each element was then compared to their average standard score across all four elements to identify any substantive discrepancy. Following Berninger & Abbott (2010) a participant was judged to display a relative strength or weakness if a score on one or more of the elements varied by 1

standard deviation or more from their averaged score for the four elements. The results were analysed in terms of the percentage of the cohort who demonstrated either a relative strength or weakness in each of the four elements.

6.5 Results

Key Hypotheses

1) There will be no statistically significant relationship between spoken language skills and transcription skills.

Using Pearson product-moment correlation coefficient, the relationship between spoken language skills (as measured by the Oral Expressions Subtest) and transcription skills (i.e. handwriting and spelling, as measured by the Alphabet Writing Task and the WIAT II Spelling Subtest respectively) was investigated (see Table 3). No significant correlation was found between handwriting and spoken language (r = -.121, p = .305). Also, no significant correlation was found between spelling and spoken language (r = .201, p = .085). This suggests, as the model predicts, that spoken language skills and transcription skills can be considered as separable in this study.

Table 3. *Pearson correlations between variables (two-tailed; N = 74).*

Variable *M(SD)*	**2**	**3**	**4**	**5**
1. Writing Quality 2.97(.945)	.418***	.471***	-.011	.202
2. Speaking 32.07(7.037)		.201	-.121	.509***
3. Spelling 34.86(6.734)			.211	.189
4. H/Writing 43.57(16.566)				.096
5. Oral Fluency 26.03(6.523)				

***Significant at .007 (Benferonni adjusted for multiple comparisons)

2) Spoken language skills will predict the quality of written composition when spelling and handwriting skills are statistically controlled for.

3) Transcription skills will make a statistically significant unique contribution to written composition when spoken language is statistically controlled for.

A hierarchical multiple regression was conducted to examine the extent to which spoken language skills and transcription skills (i.e. spelling, and handwriting) explained variability in writing quality (see Table 4). The order of variables entered into the regression was based on the proposed Simple Model of Writing (amended from Hayes', 2009 model). Transcription skills were entered into the regression first in order to account for their influence on writing quality. Spoken language was then entered into the analysis, as its relationship to writing quality is the primary focus of the current study.

Table 4

Summary of hierarchical regression analysis for variables predicting writing quality (N = 74).

Variable	β	*t*	*R*	R^2	ΔR^2
Model 1			.484	.234	.234
Spelling	.495	4.661**			
Handwriting	-.116	-1.088			
Model 2			.578	.334	.099
Spelling	.418	4.068**			
Handwriting	-.060	-.590			
Speaking	.326	3.227*			

Note. *p < .01, **p < .001

In model one, transcription skills (spelling and handwriting) were found to make a significant contribution ($F(2, 71) = 10.868$, $p < .001$), accounting for 23% of the variance in writing quality ($R^2 = .234$, Adjusted $R^2 = .213$). Spelling made a significant unique contribution of 23% (Part Correlation Coefficient^2 = .484; beta = .495; $t(71) = 4.661$, $p < .001$). However, handwriting made no significant unique contribution in model one (beta = -.116; $t(71) = -1.088$, $p = .280$). Introducing speaking to the model explained an additional 10% of variance in writing quality (R^2 Change = .099)

The final prediction model (model two) generated by the regression was statistically significant, with transcription and spoken language skills explaining approximately 33% of the variance in writing quality ($R^2 = .334$, Adjusted R^2 = .305; $F(3, 70) = 11.677$, $p < .001$). The variable that made the strongest unique contribution to the model was spelling (a transcription skill; beta = .418; $t(70)$ = 4.068, $p < .001$). Spelling contributed approximately 16% of the model's explanation of the variance in writing quality (Part Correlation Coefficient^2 = .158). Speaking also made a significant unique contribution to the model (beta = .326; $t(70) = 3.227$, $p = .002$) explaining approximately 10% of the variance in writing quality (Part Correlation Coefficient^2 = .099). Handwriting (a transcription skill) did not provide a significant unique contribution to the final model (beta = -0.60; $t(70) = -.590$, $p = .557$).

When examining the Pearson's Correlation between speaking and writing quality a medium effect size was observed ($r = .418$, $p < .007$; interpretation of effect size based on Cohen, 1988, pp. 79 – 81)

When examining the Pearson's Correlation between spelling and writing quality a medium effect size was observed (r = .471, p < .007; interpretation of effect size based on Cohen, 1988, pp. 79 – 81)

When examining the Pearson's Correlation between handwriting and writing quality no effect was observed (r = .011; interpretation of effect size based on Cohen, 1988, pp. 79 – 81)

Supplementary research hypotheses/questions

SH1) There will be a statistically significant relationship between exposure to speaking and writing activities outside of the school context and the development of written composition and/or spoken language skills.

The relationship between exposure to writing activities outside of school and performance on the written language task (i.e. writing quality) was investigated using Pearson product-moment correlation coefficient. There was no significant correlation between the two variables (r = .29, p = .134).

The relationship between exposure to spoken language activities outside of school and performance on the oral language task (i.e. spoken language) was also investigated using Pearson product-moment correlation coefficient. There was no significant correlation between the two variables (r = .34, p = .079).

SH2) There will be a statistically significant effect of gender on written composition.

An independent samples t-test was conducted to compare the written composition scores for males and females. There was no significant difference in scores for males (M = 2.96, SD = .903) and females (M = 2.97, SD = 1.00; *t* (*72*) = .053, *p* = .96; two-tailed). This suggests that gender did not affect writing quality in this cohort.

SQ1) Do the ipsative profiles of the participants reflect any consistent pattern of relative strengths or weaknesses across the cohort in one or other of the four skills sampled (handwriting, spelling, spoken language, and written composition)? For example, is written composition found to be a consistent weakness when compared to the other skills? Or is spoken language perhaps a consistent strength etc.?

Each participant's standard scores on the four areas of spelling, handwriting, oral expression, and written expression were examined to identify any pattern of relative strengths or weaknesses. Following Berninger & Abbott (2010) a participant was judged to display a relative strength or weakness if a score on one or more of the elements varied by 1 standard deviation or more from their averaged score for the four elements. In contrast to the findings of Berninger & Abbott (2010) who found that writing was a consistent weakness across their participant groups, none of the participants in the current study showed a relative weakness in writing. In fact, writing was represented as a relative strength more frequently than any of the other areas. Within the participant group Oral Expression (spoken language) was represented most frequently as

a relative weakness (see Table 5 for details of relative strengths and weaknesses across the group).

Table 5

Relative strengths and weaknesses for the four elements across the participant group (n = 74).

Element *M (SD)*	**% of group displaying relative strength**	**% of group displaying relative weakness**
Written Expression *111 (15.4)*	14%	0%
Oral Expression *98 (12.9)*	1%	20%
Spelling *107 (14.8)*	5%	3%
Handwriting *100 (26.4)*	4%	9%

Standardised means for the tests are 100, SD 15. (Wechsler, 2005; Barnett et al, 2007).

SQ2) What is the relationship between oral fluency (as a proxy for working memory) and written composition?

Using Pearson product-moment correlation coefficient, the relationship between oral fluency and writing quality was investigated (see Table 3). No significant correlation was found between oral fluency and writing quality (r = .202, p = .084).

6.6 Views of the Participants

In School Two, which formed the second phase of data collection, I was able to collect the views of the participants (n = 24) in relation to their views on which, if either, of the two modes of expression would be stronger for them. Of the twenty four participants 47% predicted that their speaking skills would be better than their writing skills, 18% predicted the opposite, and 35% predicted that they would be the same. Exploration of the ipsative profiles of these participants using the standard score data from the oral expression and written expression tasks they completed showed that only five of the participants had scores on the two tasks that differed by more than one standard deviation point. On only one of these instances did the relative difference go in the direction the participant had predicted. Of the other four, though they had predicted that they would be better at speaking than writing, their standard scores for writing were substantially better than those for speaking. I suspect that this is due to a poorer level of confidence with written language skills, a 'confidence/competence' gap. This was generally reflected in their comments prior to making the prediction.

In conversation, when the nature of the exploration had been described to the participants, and before they made their prediction as to whether speaking or writing would be a particular strength for them, they were asked what their views were on the issue. Did they think that spoken language and written language skills were the same or different? The responses of many of the participants reflected a sophisticated understanding of the issues. For example, one participant replied that it (the words) *"Are the same thing in your thoughts*

but they're not the same thing when you're saying your thoughts out loud." This participant went on to predict that her writing would be stronger than her talking and this did turn out to be the case. Another participant suggested that *"They're sort of the same thing, but spelling gets in the way."* This reference to the constraining effect of spelling was mentioned by several other participants. *"They're different things because some people might not be very good at spelling, but they know the word"; " They're quite different because my spelling compromises my writing."*

Others described the impact of the more structured nature of writing such as *"Not quite the same because in writing you have to put it in sentences that make sense, but in speaking you don't really make that much sense."* Another participant expressed it as *"Writing is better because you can think it through, but talking you just say it without actually thinking about it."* Several of the participants commented on the fact that speaking was easier than writing and more enjoyable. One participant said that *"Talking is better than writing because I'm a little miss chatterbox and I don't like grammar in English." and another participant spoke about the slowness of writing as opposed to talking.*
These examples chime with the distinctions made between talking and writing within the literature (see Crystal, 2014).

6.7 Summary

There was an absence of a statistically significant relationship between spelling and speaking or handwriting and speaking. This suggests that transcription skills and oral language skills are conceptually separable (RQ1). In a

statistically significant prediction model for writing quality that was generated by a hierarchical regression, both speaking and transcription skills were found to make a unique contribution. However, when examined further, handwriting made no significant contribution to the model as a whole (RQ2 & RQ3).

There was an absence of a significant relationship between exposure to speaking and writing activities outside of school and performance on spoken and written language tasks in this research (SQ1). Additionally, gender was not found to have an effect on writing quality (SQ2). No significant correlation was found between oral fluency and writing quality (SQ4). When examining the ipsative profiles of the cohort, a relative weakness in oral expression (spoken language) was noted to occur more than handwriting, spelling and spoken language. Writing was represented as a relative strength more frequently than any of the other factors; contrasting the findings of previous studies (SQ3).

The potential interpretation and implications of the results from the analyses will be will be explored in the following chapter.

Chapter 7

Discussion of results

Chapter Seven considers the outcomes of the statistical analyses in regard to how they relate to the proposed Simple Model of Writing (7.1), and explores in detail the role played by the individual components of the model (spoken language skills, handwriting skills, and spelling skills – sections 7.2 to 7.5) in respect to written composition. The role played by the additional variables considered in the analyses (gender and exposure to speaking and writing activities outside of the school context) and the relative strength of written composition across this particular cohort are discussed in sections 7.6 to 7.7. In section 7.8 the proposed Simple Model of Writing is compared to the existing Simple Model of Reading in regard to explanatory power. Implications for teacher assessment and intervention are covered in the final section (7.9).

7.1 Considering the findings in relation to the proposed Simple Model of Writing

One of the key aims of this research was to examine the plausibility, in theoretical and empirical terms, of using a depiction of a Simple Model of Writing (Figure 19) which mirrors the Simple Model of Reading which Gough and Tunmer (1986) used to describe the interaction of the key components felt to contribute to reading comprehension. In order for this construction of a Simple Model of Writing to be a useful depiction of the interrelationship between key components which contribute to written composition, there would need to

be evidence that transcription skills (handwriting and spelling) and spoken language skills are independent of each other. In addition, there would need to be evidence to suggest that each component independently related to writing quality and that in combination they exerted a substantive impact on written composition.

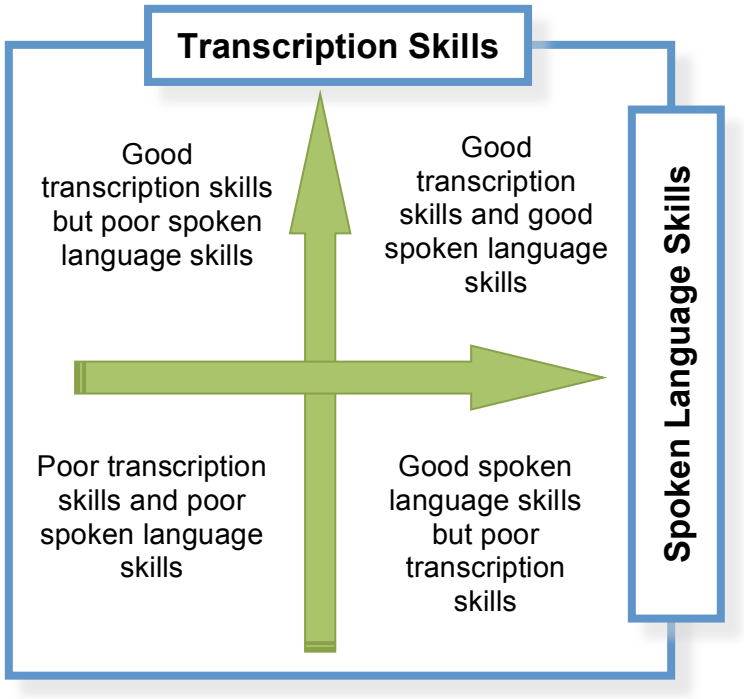


Figure 19. A proposed Simple Model of Writing.

Exploration of the data emerging from the cohort of students who participated in this study confirmed that there was an absence of a significant relationship between transcription skills and spoken language skills. Thus the depiction within the model of transcription skills and oral language skills as largely separate skills is afforded support. This reflects the established theoretical and empirical evidence (Abbott, Berninger, & Fayol, 2010; Juel, 1988; Hayes & Flower, 1986).

The further proposition encapsulated within the model, that these two skill dimensions are key components which impact on the quality of written composition skills, is supported by the outcome of the regression analysis. Taken independently, each factor exerted a moderate to strong effect (Cohen, 1992) on writing outcomes. The analysis showed that up to 33% of the variance in the quality of the participants' written composition skills could be accounted for by the combination of these two factors.

This is in line with the findings of Kim et al's (2011) similarly constructed study involving children at the early stages of formal education. Using measures appropriate to the age of the participants, after controlling for the effect of reading skills, they also found that transcription skills and oral language skills accounted for 33% of the variance in writing quality within a group of Kindergarten children. Given the young age of the participants taking part in their study, Kim et al (ibid) speculated that this relationship might well change as children progress through the education system. The outcome of this study suggests that the relative strength of these relationships may remain remarkably consistent through the primary school years.

Exploring the contribution of individual components

7.2 Impact of spoken language skills on written composition

The effect size for spoken language skills (.42) within the present cohort was greater than the mean effect size for 'oral language' for this age group reported

in the meta-analysis of studies conducted by Kent & Wanzek (2016). They reported a mean effect size of .32 (range .25 to .38 - 95% confidence interval). Though the relative effect size increases marginally in older cohorts, the figures reported by Kent & Wanzek (2016) suggest that the relationship between oral language skills and writing quality, as reflected in the studies included in their analysis, is surprisingly consistent across developmental levels, though with oral language skills exerting only a moderate effect on writing quality. This conclusion contrasts with the importance placed on oral language by Juel (1988), represented as 'ideation' within his Simple Model of Writing, and the potential importance ascribed to spoken language skills within the depiction of a Simple Model of Writing which is the focus of the present study. The somewhat stronger relationship between spoken language skills and writing quality reflected in this study may be explained by the choice of tasks used to sample participants' skills in these domains. The challenges of conceptualising, defining and measuring oral language skills (as discussed briefly earlier in the thesis p.21) are also important to consider.

In many of the studies which explore the role of oral language skills as a component contributing to written language skills (Kent & Wanzek, op. cit.), oral language skills are conceptualised as the ability to demonstrate an understanding of the oral language used by others rather than the ability to articulate one's thoughts effectively through the medium of spoken language. They are assessed through what is essentially a receptive language task. Typically, the oral language tasks used within the studies are 'aural' language tasks and involve an assessor reading either a sentence or a single word that

matches one of a number of pictures. The respondent has to identify the picture that correctly matches the verbal prompt provided by the assessor. Kent and Wanzek (ibid) identified the tests used within the studies they reviewed (p. 578). The Peabody Picture Vocabulary Test (Dunn, & Dunn, 1997) tests the respondent's ability to identify the appropriate pictures to match single words provided by the assessor. The Test for the Reception of Grammar II (Bishop, 2003) tests the respondent's ability to identify the correct picture, from a choice of four on each trial, corresponding to a series of sentences provided by the assessor. Each block of four sentences is designed to elicit the respondent's knowledge of a specific grammatical structure. The WIAT-II Listening Comprehension (Wechsler, 2005) assesses understanding of single words, and spoken sentence comprehension. On the expressive vocabulary element of this test the respondent has to produce a single word to match the verbal definition (supported by a picture cue) provided by the assessor. In the Test of Language Development-Intermediate 3: Grammatical Completion (Hamill & Newcomer, 1997) the respondent is asked to identify sentences that contain grammatical errors from a set of sentences containing both accurate and inaccurate sentences.

Even in those tests specifically sampling expressive oral language, the respondents' ability to use spoken language was generally assessed in quite a restricted fashion via the respondent providing the verbal label for an item depicted in a picture. Examples of these types of tests used in studies examining the relative contribution of oral language skills to written language include, the Expressive Vocabulary Test-II (EVT-II, Williams, 2007). In this test

the respondent has to name a series of pictures presented by the assessor. The Woodcock Johnson-III Picture Vocabulary subtest (Woodcock, McGrew, Mather, & Schrank, 2001) is similar to the EVT-II in that the respondent has to produce the name for a series of pictures.

As can be gleaned from the descriptions, these oral language assessments are all some distance removed from the language production processes most closely mirroring those used in written composition (i.e. generating thoughts, translating those thoughts into the appropriate language and then expressing them).

However, the Oral Expression test from the WIAT II (Wechsler, 2005), which was used within this study, contains elements that are closer in form to this process in that the participants are required to generate stories and instructional language (describing how to complete a task). Though, surprisingly, there are no equivalents in terms of narrative or instructional tasks within the WIAT II written expression test, the expositional writing task, where participants are asked to write a paragraph about a favourite activity, taps into similar language generation and expression processes. It may be that the greater degree of similarity between the processes used within the oral and written expression tasks within this test enables a stronger correspondence between skills across the two forms of expression to be identified (Pinto, Tarchi, & Bigozzi, 2015).

7.3 Impact of transcription skills on written composition

Within the proposed Simple Model of Writing, transcription skills were represented by handwriting and spelling. These are discussed in turn below:

Handwriting

Handwriting was not related to writing quality outcomes in this cohort. This outcome is somewhat at odds with the outcomes from previous studies examining the effect of handwriting on writing quality for this age group (Medwell, Stand, & Wray, 2009). Kent & Wanzek (2016), for example, report a mean effect size of .59 (95% CI range of .39 to .74) across the studies included in their meta-analysis. However, there was a significant degree of variability across the studies they reviewed.

It may be that, with the exception of those students who experience particular difficulties in this element of writing, by the age of 9 to 10 the mechanics of handwriting are well enough established so as to be functionally adequate for the majority of writing tasks. None of the participants in the current study scored at or below twenty-two on the alphabet writing task. Medwell & Wray (2014) suggest that for this age group a score of twenty-two or less in the alphabet writing task appears to be a threshold signalling the likelihood of handwriting impacting significantly on written composition.

Alternatively, had the time allowed for the paragraph writing element of the written expression task (Wechsler, 2005) proven challenging for the

participants, the effects of handwriting fluency may have been stronger. None of the participants found the time allowed for them to write the paragraph (up to 10 minutes) to be unduly challenging.

However, looking at the low scores several of the participants achieved on the handwriting task (those who achieved standard scores below 80), one might have expected, for these participants, to see an impact on the quality of their writing. This was not the case. For example, the participant who achieved the lowest score on the alphabet-writing task scored in the upper half of the cohort in respect to the score for writing quality. Of the five participants who attained the lowest standard scores on the handwriting task only one attained a standard score for writing quality that fell below the average for the cohort. The most parsimonious explanation for this lack of impact, as stated above, is that the time limits attached to the paragraph-writing task were not sufficiently pressing to highlight the impact of handwriting speed on writing quality. Given that the paragraph-writing task (Wechsler, 2005) is designed to capture a sample of a respondent's written composition skills, essentially the quality of language used, rather than the efficiency of their transcription skills this outcome might not be entirely unexpected.

Other possible explanations for the lack of impact of the participants' performance on the alphabet-writing task on the quality of their written paragraph composition might relate to the nature of the alphabet-writing task. It may be that some of the participants were slower than others in recalling the sequence of the letters of the alphabet rather than in regard to their

transcription speed or letter writing automaticity. The participant's perception of what their performance on the task reflects about them may have also had an impact. Whilst some of the participants would have wanted to complete as many letters as possible within the timeframe, some of them may have been concerned to favour accuracy and neatness over speed on the alphabet-writing task. Though the task instructions emphasise the need to progress through the task as speedily as possible, whilst making sure that the letters are legible, for some children (and teachers) neat writing is a strong marker of competence.

At the participants' age and stage of education (Year 5, age 9-10) letters of the alphabet are rarely written outside of the context of their role as integral parts of written words. The distance of the alphabet-writing task from the natural context within which the letters are typically written at this age and stage of education may have affected some of the participants' performance.

Whilst acknowledging the potential disconnect between performance on the alphabet-writing task and the quality of the participants' written paragraph, for the reasons related above, one might nevertheless anticipate a potential connection between their performance on the task and the number of words used within the paragraph-writing task. Returning to the profiles the five participants who attained the lowest scores on the alphabet-writing task, none of the five were represented in the lowest five scores in terms of number of words written. In fact two of these participants produced an above average number of words (80 & 84) when compared to the average for the cohort (61). With one exception, the lowest five scores in terms of number of words used in

the written passage task were produced by participants whose scores on the handwriting task fell comfortably within the average range. It may be that, in this study, the number of words used in the paragraph-writing task was more closely linked to linguistic productivity than proficiency with handwriting skills. The amount of words produced during the writing process has been shown to be linked to the frequency and length of writing bursts (Hayes, 2012). These in turn are linked to linguistic experience and competence (Connelly, Dockrell, Walter, & Critten, 2012). This is supported by evidence from studies of writing in students who have dyslexia which show that their slowness in regards to writing speed is linked to more frequent pauses rather than handwriting fluency (Sumner, Connelly, & Barnett, 2013).

Handwriting skills can act as a constraining factor where the timeframe for writing is tight or a large amount of text is required. They may also exert a greater constraining effect at early developmental stages of writing (Jones & Christensen 1999), or later for those individuals for whom letter and word formation continues to be effortful and cognitively draining (Connelly, Campbell, MacLean, & Barnes, 2006: Graham and Weintraub, 1996, [cited in Medwell & Wray, 2014]). However, beyond a certain level of competency, it may be the case that greater fluency in handwriting does not contribute substantively to the quality of written composition. The age at which a sufficient level of handwriting automaticity is typically achieved by the majority of students at a particular age is yet to be firmly established, though Medwell & Wray (2014) tentatively suggest a figure of 22 Alphabet Letters Per Minute (ALPM) as the threshold for 11 year olds. However, the scores that the overwhelming majority of the

participants attained on the alphabet-writing task suggests that this threshold level of competence related to their age had been attained.

Spelling

Spelling exerted a significant effect on writing quality outcomes for this group of participants. The outcome of this study chimed with that of other studies (Sumner, Connelly, & Barnett, 2016; Olinghouse, 2008; Berninger et al, 2002;) reporting on the impact of spelling on writing quality well into the upper Primary years of schooling and beyond. The effect size of .40 matches closely with reported effect sizes for spelling in this age group (Kent & Wanzek, 2016).

The effect of spelling skills on writing quality may be due to the inhibitory effects of spelling confidence on vocabulary choice. The writer sticks to words s/he is confident s/he can spell and avoids other possibly more sophisticated or expansive vocabulary because of a lack of familiarity with the spelling of these words (Sumner, Connelly, & Barnett, 2016 op. cit.; Berninger, et al, 2008). This was reflected in the views of several of the participants in school 2 who were asked for their views before the individually administered tasks were completed who stated that *"Spelling gets in the way"*, and *"Some people might not be very good at spelling, but they know the word", and "My spelling compromises my writing".*

Alternatively, in line with the cognitive capacity theory of writing (McCutchen, 2011), the cognitive effort required to spell the words chosen to express the ideas reduces the cognitive resources available to planning and language

generation processes. One has to ‘hold the thought in mind’ whilst writing the words used to express that thought. If the act of transcription, accurate spelling in this instance, requires too much conscious effort, then sometimes the thoughts and their associated form of linguistic expression are lost. Most writers are familiar with ‘losing one’s chain of thought’ the situation of losing the particular linguistic translation of the ‘thought’ whilst in the midst of writing it out. This cognitive capacity element is reflected in established models of writing (Juel, 1988; Berninger, 2000; Hayes, 2012) and in this proposed model where the value of strong transcription skills in releasing cognitive capacity to other elements of the writing process such as idea generation, linguistic translation, planning and editing is emphasised.

Thus the relationship between transcription skills and written composition was, in this case, mediated wholly through the impact of spelling skills.

7.4 Additional findings emerging from the analysis

Three additional findings emerged from the current study. They merit exploration because they appear to contrast with established findings from previous research. Writing did not feature as a relative weakness within the ipsative profiles of the participants. In fact, it was more likely to figure as a relative strength (discussed in more detail in 7.5). Within this cohort there was no evidence of a relationship between gender and writing quality (see 7.6). Also, exposure to literacy activities and experiences outside of the school setting was not found to relate to written composition (see 7.7).

7.5 The relative strength of writing skills within this cohort

When exploring the ipsative profiles of the participants, written composition did not emerge as a relative weakness across the cohort. In fact, it was more likely to be a relative strength. This contrasts with the outcomes of previous research looking at individual skill profiles across different aspects of literacy (Berninger & Abbott, 2010). This outcome also conflicts with national data reflecting the relative weakness of written language skills across the school population (DfE, 2012; DfE, 2016 National Curriculum assessment results).

One possible explanation for this is that, at the time of the data collection, staff at both schools were highly focused on improving writing skills within the cohort and extended writing had taken very much a prominent position within the curriculum. It may be that the writing performance of the participants reflected this increased school level focus on writing. This was linked, in anticipation of any prospective OFSTED inspection, to the motivation of staff to achieve a repeat of the 'outstanding' judgement that had previously been applied to both schools. Senior leadership teams at both schools were aware that one of the key OFSTED priorities at the time was on increasing the proportion of higher-level writing within student cohorts at the end of Primary school.

7.6 The absence of a gender gap

The results from this study did not fit with the well-established finding of girls' writing being consistently better than that of boys (Moss & Washbrook, 2016; DfE, 2012). Within this particular cohort there was no discernable difference between the written composition skills of boys and girls. Given the robustness of

the identified gender gap in regard to writing skills, this finding was rather surprising. There may be a number of possible reasons for this anomaly.

It is possible that the sample of written skills which was collected was not sensitive or discerning enough to pick up this difference. The passage-writing task (Wechsler, 2005) required an expositional rather than a narrative style of writing. Expositional writing tasks require the respondent to elaborate on an argument, view or position in regard to an issue. The Oral Expression test samples spoken narrative skills, whereas the written expression task for participants of this age samples only expository writing. The language structures and vocabulary within this type of task are generally more circumscribed than those available when creating a story. It has been argued that the link between spoken language skills and narrative writing is stronger than other forms of writing because of the greater number of structural similarities between spoken and written narratives (Pinto, Tarchi, & Bigozzi, 2015). It may be that the stronger linguistic skills of girls relative to boys (Moss & Washbrook, 2016) would have become more prominent within a narrative writing task which would have allowed for a more expansive use of creative language.

This study involved a relatively small number of participants, and a limited number of schools. The social demographics of the schools (only 5.5% of the participants were boys registered for free school meals) did not include a great number of boys from poor socio-economic backgrounds who are reported to be a significant group affecting the gender gap in literacy and language (Moss &

Washbrook, 2016). Thus in this instance, the broader statistical pattern found in extant literature may not have been reflected.

A more promising or hopeful interpretation is that the outcome in this particular study may be an indication that both gender differences and general weaknesses in written skills could be addressed by good quality teaching. Without appropriate empirical comparisons, for example, whether the gender gap exists in primary schools that have a record of outstanding performance, identification of the causes of the contrary result in this cohort must remain speculative. Given that the gender gap in performance was not found within this cohort, and this may be related in this particular instance to good quality teaching and a vigorous focus on improving written language skills, this may potentially be a key element in addressing the existing gender gap in writing across the broader school population.

This approach would address the issues raised in the analysis and recommendations made by Moss and Washbrook (2016, ibid). In their review of the gender gap, they focus on research evidence related to the early stages of language and literacy development, primarily at the pre-school stage, to identify the factors leading to the gender gap. Understandably, given this analysis, their focus on research regarding interventions to address the gender gap also relate to this phase. Essentially, their premise is that the gender gap as regards early language and literacy skills starts to emerge at a very young age. In consequence, interventions aimed at addressing this gap need to be targeted at this stage of development.

The ‘Lost Boys’ report from Save the Children (savethechildren.org.uk, 2016), which is informed by the research conducted by Moss and Washbrook, (2016, ibid), emphasises the point regarding a gender gap in language and early literacy skills existing at the start of children’s formal schooling. This gap appears to be particularly pronounced for boys from poorer socio-economic backgrounds. The figures presented within the report suggest that the gap appears to endure through to the end of the Primary phase of education and beyond. Children who did not achieve the expected standards of early language and communication at five were found to be over four times more likely to have below average levels of attainment in literacy at 11 than those who did. This analysis suggests that the gender gap and the weaker performance of boys from poorer socio-economic backgrounds in regards to literacy (though measured in regards to reading as the conventional accepted proxy for literacy, rather than reading and writing) appear to be closely linked to language skills. This increases the importance, as reflected in the proposed Simple Model of Writing, of recognizing the role of spoken language skills in improving literacy skills, including writing.

7.7 Impact of exposure to speaking and writing experiences outside of the school context

A proportion of the participants in School One (27 students) had responded to a survey organised by the National Literacy Trust during the summer term of the previous academic year (Clarke, 2015). Elements of the survey were designed to get a picture of the students’ attitude towards and exposure to language and literacy related activities outside of the school context. The students’ responses

to the survey questions were translated to numerical scores for the purpose of inclusion in a correlation matrix. Whilst appropriate caution needs to be applied to any interpretation given the way in which the numerical data was generated, inspection of the data indicated that in this particular school the degree of exposure to literacy and language experiences outside of the classroom setting did not differentially impact on writing quality outcomes or the participants' performance on the Oral Expression test they completed.

In a similar vein to the question raised earlier in respect to overcoming gender effects, this raises the question of whether outstanding schools could compensate for or redress the differential effects of home background factors on student performance. The social demographics and size of the sample should temper any conclusions to be drawn on this point from the outcomes of this study. However, the indications are that outstanding schools (School One was judged to be outstanding by OFSTED inspectors and had received that judgement on several consecutive inspections) can redress potential limitations on progress emerging from home factors.

This is rather a hopeful message given the limited amount of empirical evidence emerging from this study. However, it does chime with well-established research emphasising the powerful effect of teacher expectation and children's own anticipations of success in relation to literacy skills development (MacKay, 2007).

The potential effect of teacher expectation on student performance was initially demonstrated in the well-known ‘Pygmalion in the Classroom’ experiment (Rosenthal & Jacobson, 1968). In this experiment, at the beginning of the academic year, teachers were given false information regarding the outcome of a test that purportedly identified those children who were predicted to be ready to enter a period of increased learning ability or academic ‘blooming’. In fact, though all of the children in both the experimental and control groups had undertaken an IQ test, placement in the ‘ready to bloom’ group was entirely random. In terms of increased scores on the IQ test at the end of the academic year the outcomes for the children who were described as potential academic bloomers was quite marked. The effect was heavily skewed towards the younger children (i.e. those in grades one and two). The authors speculated that this was because younger children were more susceptible to these effects. Though this particular study is not without controversy (Jussim, & Harber, 2005; White, & Locke, 2000) the impact of expectancy effects across a range of contexts has been demonstrated (Andrews, Wisniewski, & Mulick, 1997; Rosenthal, 2003).

A simple example of the power of anticipated success in the sphere of literacy was demonstrated by the ‘Declarative’ study which formed part of the West Dunbartonshire Literacy Initiative (MacKay, 2007). As Mackay (2008) said:

“The idea was simple to the point of naivety. All the children had to do every day was to make bold declarations about their future levels of reading

achievement. It could be done individually, or in groups or as whole class chants." (p.931)

After one term those children in the experimental group made relative gains in important early literacy skills along with positive changes to their attitudes to reading and belief in future progress. The same factors of self-efficacy beliefs, attitude and motivation have been identified as instrumental in influencing achievement in writing (Graham, Berninger, & Fan, 2007; Pajares, 2003).

7.8 How does this Simple Model of Writing compare to the Simple Model of Reading in terms of explanatory power?

The proposed Simple Model of Writing essentially 'grafts' the structure of the Simple Model of Reading onto a facsimile representing writing. The components are swapped in a like-for-like fashion. Decoding is replaced by handwriting & spelling. Listening comprehension is replaced by spoken language skills. Similar analyses of the factors depicted within the Simple Model of Reading found that the two key factors included in that model (decoding + listening comprehension) predicted up to 48% of the variance in reading comprehension (Joshi & Aaron, 2000). The difference in predictive potency between the key factors depicted in the Simple Model of Reading and those depicted in this proposed Simple Model of Writing (48% versus 33%) suggests that such a straightforward grafting process is not without limitations. It may be that generating and expressing thoughts in written form is a more complex and cognitively demanding process than receptively processing language through reading. At the level of transcription skills this appears to be the case. For

example, the demands of handwriting have no equivalent within the reading process. In addition, the phonological skills and phonic knowledge required for mastery of spelling is greater than that required for reading (Vaessen, 2010; Ehri, 2000). Most alphabetic languages are more consistent in the print to sound direction than in the speech sound to script direction and there are more phonetically correct ways to spell than to read a word. This is particularly the case in the English language which contains a large number of homophones (words that 'sound' the same, but are spelled differently and have different meanings).

However, despite these differences and the greater cognitive complexity of written composition over reading comprehension, the combination of transcription skills, primarily spelling at the age and stage of education of the cohort of participants, and spoken language skills can account for up to one third of the variation in the quality of written composition skills.

7.9 Implications for teacher assessment and intervention

In line with the 'pragmatic realist' epistemological stance the "So what?" question arises. The use of this specific construction of a Simple Model of Writing, with the appropriate caveats, appears to be justifiable, so what difference will this research make to the outcomes for those children whose life chances are affected by their competencies in speaking and writing? Referring in this instance to research in the field of literacy skills, though the critique has been levelled more generally (Mitchell, 2014), Jeffes (2016) suggests that academic research seems to have had little impact on applied practice and that

schools experience significant difficulties in accessing relevant research and putting findings from research into practice.

If, as seems to be the case, the proposed Simple Model of Writing is a plausible construction, in both theoretical and empirical terms, then it could be used to influence and support the assessment activities and practice of teachers. If made readily accessible to them, the structure could be used as a means to identify individual skill profiles that could then inform instructional approaches (Figure 20). This author would suggest that if teachers directly (rather than indirectly) assess the component skills involved in writing they will be in a much better position to make appropriate and relevant educational decisions and be able to adapt their instruction to suit the individual needs of the students.

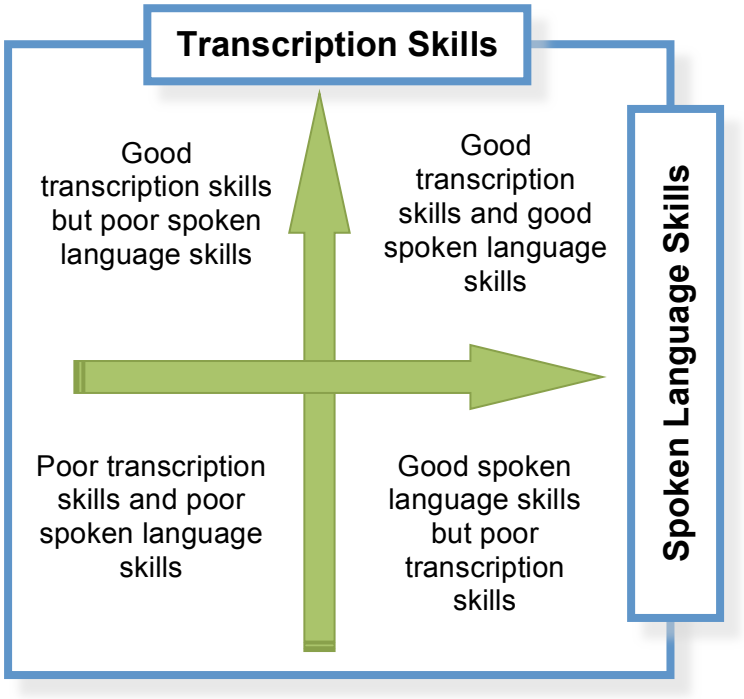


Figure 20. Using the model to identify skill profiles

Mapping a child's strengths profile using the model will provide teachers with

useful information regarding potential barriers to progress and areas for intervention. For example, those children whose skills profile falls within the lower left quadrant, who have delayed spoken language skills and delayed transcription skills, would require a broad-based intervention programme targeting both spoken language and transcription skills. Those in the bottom right quadrant, who have age-appropriate spoken language skills but delayed transcription skills, may require a very specific programme targeting spelling and/or handwriting skills. These are the children who are most likely to be described as dyslexic, though the British Psychological Society definition of dyslexia as a condition where *'… accurate and fluent word reading and/or spelling develops incompletely or with great difficulty. This focuses on literacy at the 'word level' and implies that the problem is severe and persistent despite appropriate learning opportunities'* (BPS, 1999, p.64) would fit children in either of the lower two quadrants (Elliot & Grigorenko, 2014). Those children whose skill profile places them in the upper left quadrant are likely to have needs that may be under recognised as they may on the surface display accurate and fluent writing skills and grammatical awareness but lack depth and complexity in terms of the linguistic content of their writing. The equivalent profile in the domain of reading, children who decode well, and appear to be fluent readers but struggle to comprehend what they read, are sometimes referred to as having a 'hidden handicap' (Snowling & Hulme, 2012). Such children are likely to need a language-based intervention focusing primarily on language comprehension and spoken language skills which bridges to written expression. It may be that, in a mirror fashion to the scenario identified by Snowling and Hulme (ibid) where teachers inappropriately identify reading comprehension

problems within this group as a ‘reading skills’ problem rather than a receptive language problem, teachers may sometimes address delayed progress with writing primarily as a ‘writing skills’ problem rather than an expressive language issue.

Identification of potential key factors for individual students that need addressing in order to develop age and stage appropriate written language skills could follow a logical process using the components in the model as a useful guide. Being able to identifying when the quality of a child’s writing is significantly below the expected range for their age and stage of education (see section 8.4) could trigger a series of explorations guided initially, though not in its’ entirety, by the components outlined in the model. Stated crudely, check spelling, check handwriting, check spoken language skills and address any teaching needs in these key areas. This may appear to be a little mechanistic, however, the intention is not to discount consideration of other factors influencing written language skills and performance such as affect, motivation, confidence, functional and social meaning of the writing, stimulation, and so on, but to draw teacher’s attention to the need to ensure that these core components or skills are assessed and addressed as needed.

If this model is to be useful in supporting teachers in this process of identifying an individual’s profile in this way, easily accessible assessment tools, techniques or activities would need to be available to measure children’s progress in the key components of handwriting, spelling, spoken language skills, and written language skills. Such assessments tools or processes would

need to provide the necessary information, be easily accessible and useable by school staff, and be practically deliverable within a typical school context. The challenges of operationalizing the model in this respect are discussed in chapter 8.

Chapter 8

Operationalising the Simple Model of Writing

Addressing the 'research-to-practice' gap (Jeffes, 2016, ibid; Mitchell, 2014, ibid) involves practitioners (primarily teachers and other educational professionals) using the Simple Model of Writing to guide understanding and practice. In Chapter Eight the specific considerations regarding assessment for each of the key components contained within the Simple Model of Writing are outlined.

8.1 Assessing handwriting skills

One of the simplest measures of handwriting automaticity which could be available to school staff is the alphabet-writing task which has been used in a range of research studies (Jones & Christensen, 1999; Medwell & Wray, 2014). This involves the child writing out, in sequence, the letters of the alphabet continuously in lower case as quickly as they can in one minute. This assesses children's ability to quickly generate the mental representations and motor codes necessary to write the letters. This is referred to as orthographic motor integration. Though not reflected in the outcomes of the current research where handwriting (as measured by the alphabet writing task) did not have a significant impact on the participant's performance on the writing measure, there is a well-established body of evidence demonstrating the link between letter-writing automaticity and written composition skills (Berninger, et al, 1997; Graham, et al, 1997; Barnett, Henderson, Scheib, & Schulz, 2007). Standardised age-related norms for the alphabet-writing task are available from

the age of nine in the Detailed Assessment of Speed of Handwriting – DASH (Barnett, Henderson, Scheib, & Schulz, 2007, op. cit.). However, performance criteria for measures of Alphabet Letters per Minute (ALPM) for children below this age are emerging. For example, Medwell and Wray (2014) in their study, which included seven-year-old children, found that the average ALPM for this cohort was 17.6. Data from their research suggested that, for this age, a rate of twelve or less ALPM was a threshold for a significant constraining impact of handwriting on writing performance, as measured by grades attained on Key Stage One writing SATs. Given the emergent nature of the data, the authors cautioned against using this figure as a screening test on its own. However, given the high relative risk of significant impairment in writing outcomes, they suggest that this threshold might tentatively be used for identifying children at the age of seven whose handwriting may be significantly compromising their written composition skills. Using a similar approach, the threshold for eleven-year-old children was an ALPM score of 22 or less. These studies go some way towards identifying levels at which 7 and 11 year olds might benefit from improving their letter-writing automaticity in order to improve written composition. They are simple to administer and, though tentative in terms of statistical or norm-related data, may serve to guide teachers to give greater emphasis to the teaching of handwriting.

8.2 Assessing spelling skills

Measures of spelling accuracy are readily accessible to school staff. Assessments typically take the form of age/stage related curriculum measures

sampling children's ability to accurately spell a specified range of common words or words representing phonic structures at a particular stage in their education. This type of approach, for example, is reflected in the government's 'English Programmes of Study' for the new National Curriculum (DfE, 2013). The programmes of study specify the required spelling knowledge children should be taught at relevant phases of their education. However, the criterion for assessing to what degree this knowledge has been mastered is relatively loosely defined as, '*By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.' (p.6)*

More detailed guidance and specific teaching approaches to the teaching of word reading and spelling is outlined in the Government's Letters and Sounds programme (DfES, 2007, www.dfes.gov.uk). Though differing in the particulars of the word reading and spelling curriculum in terms of the order in which phonic items and structures are introduced and the degree to which whole word recognition for both reading and spelling is incorporated within the programme, broadly the same approach is taken by the main commercial literacy programmes used by schools in the UK (see, for example, Jolly Phonics, Read Write Inc., Phono-Graphix, Sounds-Write).

Though more typically used by special needs support staff rather than class teachers, tests of spelling accuracy which translate the respondent's performance into a standard score (e.g. the Single Word Spelling Test, GL Assessment; Wide Range Achievement Test, Robertson & Wilkinson, 2006), or

spelling age equivalent (e.g. the Schonell Spelling Test), are also widely available. In addition, teachers may make use of a range of commercially produced spelling tests which help identify the specific phonic structures, morphological features, or word types which the child may be struggling to master, or link to the spelling skills outlined in the National Curriculum.

All of these approaches to assessing spelling skills share in common an exclusive focus on accuracy. The incorporation of the assessment of spelling within the key stage writing assessment tasks (Standards & Assessment Agency, 2016) adds an element of applying in context in addition to accuracy. However, notwithstanding the reference within the English programmes of study for key stages 1 and 2 (DfE, 2013) on the importance of children *'spelling quickly and accurately'* (p.5), there is an absence of any measure of automaticity (the ability to perform a skill or deploy a piece of knowledge accurately, quickly and with minimal conscious effort) within the assessment materials. In short, these are assessments of spelling accuracy, not spelling efficiency. This omission is concerning given the link with the impact of effortful spelling processes on the quality of written composition skills (Medwell & Wray, 2009, 2014; Hayes, 2012). The outcome of the present study, where spelling skills were found to have a strong relationship with written composition quality, further highlights the important role of spelling skills in the written composition process.

The development of fluent spelling, along with handwriting automaticity, would appear to be of great value in freeing up as much precious cognitive resource

as possible for the text generation processes (McCutchen, 2011; Jones & Christensen, 1999; Hayes, 2012; see Figure 22).

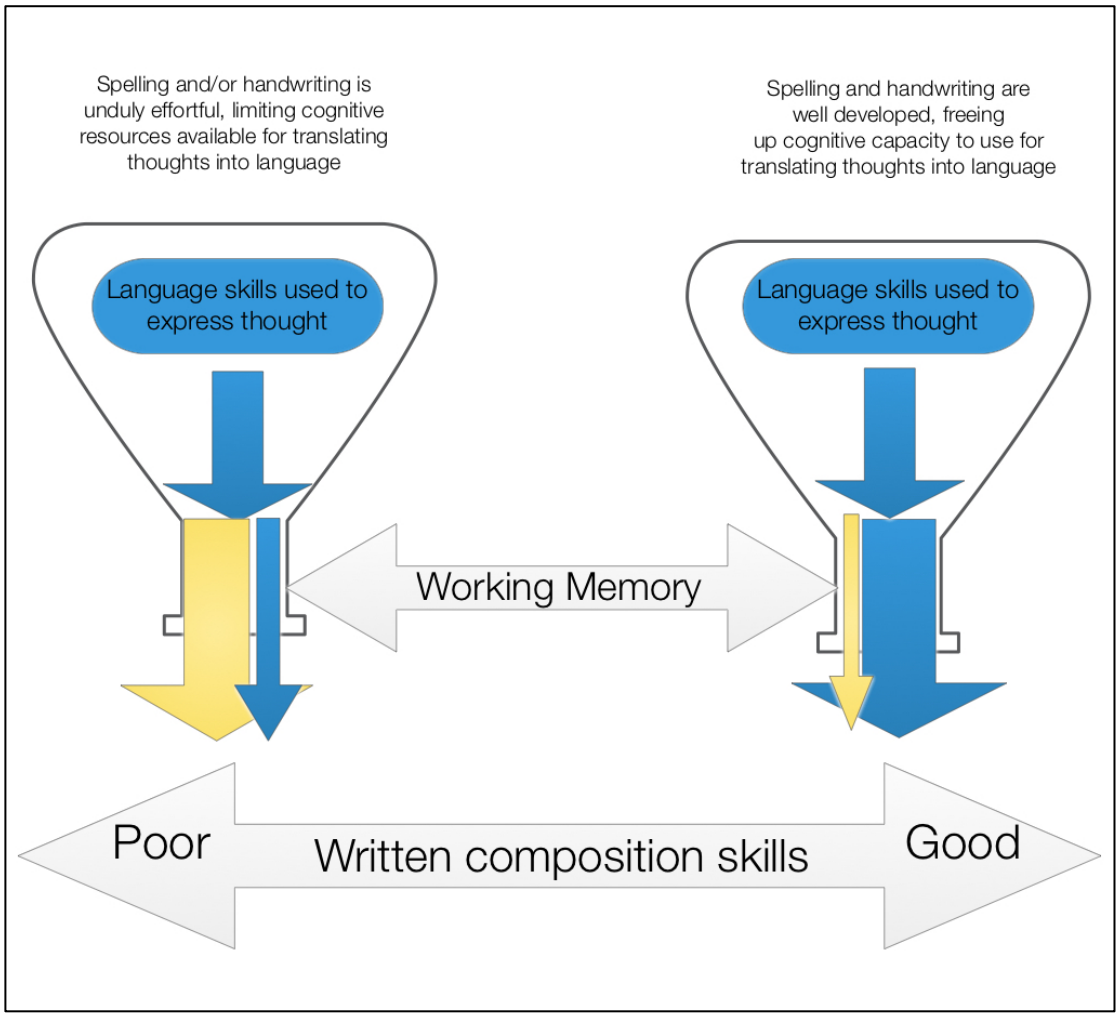


Figure 21. Diagrammatic illustrating role of automaticity of transcription skills on written composition

This lack of focus on spelling fluency may be due to an assumption that fluency in regard to handwriting, in combination with accurate spelling, leads naturally to spelling fluency. This assumption appears on the surface to be plausible, however, whilst handwriting proficiency and spelling accuracy are necessary for fluent spelling to develop, they may not always be sufficient.

There is a well-established body of research demonstrating the value of assessing and teaching fluency in the domain of reading and emphasising the link between word reading fluency, referred to as Rapid Automatic Naming (RAN) and reading comprehension (Rasinski, 2012; Pikulski & Chard, 2005). In a similar vein, theoretical models (Juel, 1988; Hayes, 2012) and empirical research (Berninger, 1999; Jones & Christensen, 1999) demonstrate the importance of fluent transcription skills for written composition skills. However, spelling fluency as a specific concept, separate from handwriting automaticity and spelling accuracy, appears to have been overlooked. Whether speeded measures of spelling would identify a potential equivalent to RAN within the domain of spelling, Rapid Automatic Spelling (RAS), has yet to be explored. As an outcome of the present study, the author has incorporated fluency measures within the spelling assessment (the Essential Spelling Skills Assessment – ESSA) which forms part of an integrated literacy skills assessment and intervention training package (see section 9.4).

8.3 Assessing spoken language skills

The outcomes of the present study emphasise the importance of spoken language skills in the development of writing proficiency. The importance of assessing and teaching spoken language skills or ‘oralcy’ is increasingly being recognized (Alexander, 2012 Op. cit.) and this is reflected in the greater emphasis placed on the development of spoken language the current National Curriculum (DfE, 2013). However, the robustly communicated aspirations and expectations contained within the National Curriculum documents are not matched with equally rigorous assessment guidance (see below). The statutory

requirements covering years one to six within the current National Curriculum in relation to teaching pupils spoken language (Figure 24) are laudable. However, as was the case in the previous version of the National Curriculum, they can appear to be somewhat platitudinous or a codification of the obvious. There is very little guidance on what competency in regard to any facet would look like at various ages or stages of development.

Statutory requirements

Pupils should be taught to:

- listen and respond appropriately to adults and their peers
- ask relevant questions to extend their understanding and knowledge
- use relevant strategies to build their vocabulary
- articulate and justify answers, arguments and opinions
- give well-structured descriptions, explanations and narratives for different purposes, including for expressing feeling
- maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments
- use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas
- speak audibly and fluently with an increasing command of Standard English
- participate in discussions, presentations, performances, role play, improvisations and debates
- gain, maintain and monitor the interest of the listener(s)
- consider and evaluate different viewpoints, attending to and building on the contributions of others
- select and use appropriate registers for effective communication

Figure 22. Statutory requirements for teaching spoken language – years 1 to 6 (DfE, 2013, p.7)

In the notes accompanying the statutory guidance teachers are advised that '*These statements apply to all years. The content should be taught at a level appropriate to the age of the pupils. Pupils should build on the oral language skills that have been taught in preceding years.' (p.7).* A key element in this statement is *'have been taught'* as opposed to 'have been learnt'. This hints to a lack of understanding or recognition of the potential gap between having been taught and having learnt. 'Having been taught' can be interpreted as having been exposed to a set of learning activities linked to a curriculum target, whereas 'having learnt' requires a different measurement metric, one which involves an active demonstration of mastery on the part of the learner (see Skills Mastery Hierarchy, Haring, 1978, op. cit.). Guidance on what counts as competence, a demonstration of having learnt, in respect to these statements of spoken language skills at respective ages is not included in the guidance. Taking an example from the list of statutory requirements; that pupils should be taught to '*give well-structured descriptions, explanations and narratives for different purposes, including for expressing feeling'.* What would enable a teacher to judge whether a pupil at the age of seven had achieved this outcome at a level of sophistication or competence commensurate with his or her age? Similarly, what would be the criteria for age-appropriate performance of this skill for a pupil at the age of eleven? The same questions could be posed in relation to all of the statutory requirements related to spoken language within the National Curriculum. Therefore a perfectly legitimate question for a teacher to pose would be to ask how to know if a pupil's spoken language skills were at a level commensurate with their age and stage of education? Assessment criteria for judging progress against the spoken language objectives set out in the

National Curriculum were notably absent from the statutory assessment arrangements for 2015/2016 and this absence has been repeated in the current arrangements for 2016/2017 (Standards and Testing Agency, 2015; 2016).

This challenge of measurement, and the understandable tendency towards focusing on those aspects of the curriculum which are more easily quantifiable or have more tangible markers of progress, may have contributed in some measure to the relative lack of emphasis placed on the teaching of spoken language skills in teachers' practice (Alexander, 2012, op. cit.). Stated in a relatively simplistic way: '*we start out with the intention of making the important measurable, and end up making the measurable important'* (Wiliam, 1998. p.1). The link to high-stakes end of phase testing has also created an incentive for teachers and students to concentrate primarily on those aspects of attainment that are to be assessed. Targets can have the effect of skewing teacher behaviour in a way that does not reflect the original aim behind the targets (Shorrock & Lieu, 2013) .

A lack of formal assessment activities for spoken language skills, when contrasted with the presence of such activities for other domains, runs the risk of decreasing the status of the domain. The absence of assessment activities related to spoken language in the statutory assessment arrangements leads Hackman (suehackman.com, 2015), in her blog, to suggest that, *'Spoken language has entered the twilight zone".* There is a concern that those children most likely to be most disadvantaged if spoken language is not given sufficient weight in the delivery of the curriculum are those who are in most need of being

taught spoken language skills such as the shy, the socially deprived and the newly arrived (Hackman, 2015).

The practicalities of collecting samples of spoken language are considerable. Spoken language, unlike writing, is not ‘self-documenting’ and would require considerable effort on the part of the teacher to collect. The impact of the speaker’s accent or use of vernacular phraseology may also have an impact on judgements of the quality of the spoken language to a greater degree than would be the case with the equivalent presentational factor of handwriting within written language samples. These factors would make the design of a test of spoken language that would be relatively easy for teachers to use and which would consistently produce valid and reliable results challenging.

Attempting to operationalise the proposed Simple Model of Writing may well prompt exploration and development of reliable, robust and accessible assessment measures that teachers can use to monitor children’s spoken language development.

However, given the challenge of collecting and analysing samples of spoken language it may be possible, in the absence at the moment of a test that could be easily used by teachers, to identify a simple assessment process or test that could act as a reasonable proxy indicator. The majority of research projects exploring the role of oral language in the writing process use a receptive language task as the measure of oral language skills (see Kent & Wanzek, 2016). Many of these are relatively simple measures of receptive vocabulary.

Whilst these are tests of aural rather than oral language skills their use may serve to raise greater awareness among teachers of the role of language skills within the curriculum. Within the UK context a number of assessment tools have been developed and are gradually being implemented by an increasing number of schools. Some are computer-based assessment systems such as SpeechLink and LanguageLink (www.speechlink.co.uk), or more conventional assessment measures (WellComm, GL Assessment). Such tools are generally used to identify those individuals or groups whose speech or language is problematic. They typically provide guidance on strategies and materials to use with small groups or individuals to address the specific areas of delay which have been identified. Whilst not ideal in regard to targeting spoken language skills, such assessment activities may lead to greater on-going and active awareness of children's spoken language within the teaching profession. However, the lack of a direct link to National Curriculum objectives and key stage assessment tasks renders any such assessments and related activities vulnerable to 'attention fade' as other aspects of the curriculum, which are formally assessed, receive greater attention.

Unfortunately, guidance for teachers on monitoring children's progress against the objectives contained within the National Curriculum is largely absent. However, attempts to layer the national curriculum spoken language objectives into developmentally appropriate levels are emerging (e.g. see Climbing Frames at schoolpupiltracker.com, linked to Sue Hackman, 2015, op. cit.).

8.4 Assessing written language skills

As with spoken language skills, assessment of written language skills is a challenging task. It is considered by some to be the single most significant obstacle to practical progress in writing instruction and research (Cole, Haley, & Muenz, 1997 – cited in Dunsmuir et al, 2015).

Writing takes a range of forms, has a number of different elements and serves a number of different functions. Attempts to assess written language have tended to fall into two broad approaches, the holistic and the analytic (Dunsmuir et al, 2015). The holistic approach provides a single score representing the general quality of a piece of writing taking into account a set of criteria which might include elements such as spelling and handwriting, the quality of the language used, and elements of grammar and syntax. Holistic scoring has been questioned in regard to validity and reliability (Hayes, Hatch, & Silk, 2000), and criticized as lacking in diagnostic detail regarding specific elements of a persons' writing skills (Dunsmuir et al, 2015). The analytic scoring approach allows for individual scores to be given for different elements and is therefore seen by some to be both more reliable and to give more useful guidance for interventions (Dunsmuir, et al, 2015; Hayes, Hatch, & Silk, 2000).

Whilst there are assessment tools for written language that have psychometric properties, such as the WOLD (Wechsler, 1996) and the WIAT II (Wechsler, 2005), these are available only to those who have the appropriate training and qualifications (British Psychological Society, 2011). They are also criticized as being somewhat distanced from the National Curriculum attainment targets and

descriptors, for example not including spelling and handwriting in the scoring rubric (Dunsmuir, et al, 2015).

The assessment criteria for written language included within the recent key stage assessment criteria for 2017 (DfE, 2016) are analytic in structure and include a range of transcription and composition or expressive language elements. Judgments regarding children's' competencies against the performance criteria are split into three levels '*working towards the expected standard; working at the expected standard; working at a greater depth within the expected standard'*. The guidance clearly states that in order to be credited as having achieved a level the pupil has to demonstrate attainment of all of the statements within that standard and all the statements in the preceding standards (p.2). At key stage 1, for each level the key phrase 'after discussion with the teacher' precedes all of the performance statements. For example, at the 'working at the expected standard' level the following criteria are applied:

The pupil can write a narrative about their own and others' experiences (real and fictional), after discussion with the teacher:

- *demarcating most sentences with capital letters and full stops and with some use of question marks and exclamation marks*
- *using sentences with different forms in their writing (statements, questions, exclamations and commands)*
- *using some expanded noun phrases to describe and specify*
- *using present and past tense mostly correctly and consistently*
- *using co-ordination (or / and / but) and some subordination (when / if / that / because)*
- *segmenting spoken words into phonemes and representing these by graphemes, spelling many correctly*
- *spelling many common exception words**
- *spelling some words with contracted forms**
- *adding suffixes to spell some words correctly in their writing e.g. –ment, –ness, –ful, –less, –ly**
- *using the diagonal and horizontal strokes needed to join letters in some of their writing*
- *writing capital letters and digits of the correct size, orientation and relationship to one another and to lower case letters*
- *using spacing between words that reflects the size of the letters.*

Fig. 23. Standards and Testing Agency, 2016, Interim teacher assessment frameworks at the end of key stage 1, p.5). (The statements accompanied by asterisks denote when additional detail on specific items related to the criteria is available. The qualifiers 'some', 'many' and 'most' are defined and illustrated with greater precision in the accompanying exemplification material).

At key stage 2 the expected standard is that:

The pupil can write for a range of purposes and audiences (including writing a short story):

- *creating atmosphere, and integrating dialogue to convey character and advance the action*
- *selecting vocabulary and grammatical structures that reflect the level of formality required mostly correctly*
- *using a range of cohesive devices*, including adverbials, within and across sentences and paragraphs*
- *using passive and modal verbs mostly appropriately*
- *using a wide range of clause structures, sometimes varying their position within the sentence*
- *using adverbs, preposition phrases and expanded noun phrases effectively to add detail, qualification and precision*
- *using inverted commas, commas for clarity, and punctuation for parenthesis mostly correctly, and making some correct use of semi-colons, dashes, colons and hyphens*
- *spelling most words correctly* (years 5 and 6)*
- *maintaining legibility, fluency and speed in handwriting through choosing whether or not to join specific letters.*

Fig. 24. (Standards and Testing Agency, 2016, Interim teacher assessment frameworks at the end of key stage 2, p.4).

However, it is made clear in the documents that the assessment framework is to be used only to make a teacher assessment judgement at the end of the key stage and is not intended to be used to track progress throughout the key stage; in other words, it is summative rather than formative assessment. An alternative approach, first developed by Deno, Marston, and Mirkin (1982), is Curriculum-based measurement (CBM) of writing development. CBM assessments are designed to provide useful measures for ongoing instructional decision-making. CBM tasks are designed to produce reliable and valid scores, whilst being simple to use and easy to understand (McMaster, Du, Parker, & Pinto, 2011).

There are a number of recently constructed CBM writing assessments developed by researchers for the use of teachers within the English educational context in monitoring children's progress with essential elements of the writing process. For example Dockrell, Connelly, Walter, and Critten (2012) exploring the writing of two hundred and thirty six pupils in English primary schools ranging in age from eight to ten, constructed a relatively uncomplicated curriculum-based measure of writing which could be used by teachers on a relatively regular basis to track progress. Making use of two types of writing prompts, expository and narrative, children are allowed up to five minutes to complete a relatively short written piece. It is then scored in respect to measures of fluency, (described by the researchers as total words and correct word sequences), and accuracy. The scoring criteria assess spelling, grammar, capitalisation, punctuation and understanding of sentence structure.

In addition, based on the total words produced by eight, nine, and ten year olds in their sample, the authors constructed whisker plots identifying the top and bottom quartiles for each age group in response to either the narrative or expository writing task. For example, they identified that, for eight year olds on the narrative writing task, seventy words or more represented the top quartile, whereas ten words or less represented the bottom quartile. They suggest that this simple measure could be used to identify struggling writers.

Dunsmuir, et al (2015) constructed a series of narrative writing assessments, closely linked to the expectations in the current National Curriculum. Making use of an analytic scoring rubric, the Writing Assessment Measure (WAM) was reported by the researchers to have good levels of reliability and validity, correlating significantly with the Wechsler Written Expressive language sub-test (Wechsler, 1996). It covers the mechanics of writing, which the authors relate as spelling, handwriting, punctuation and grammar. It also assesses narrative skills, defined as vocabulary, organisation and overall structure, and ideas. When assessing the pupil's response to the writing prompt, their performance for each of these seven components is matched with a performance statement representing one position on a four-point scale. The measure provides an overall score representing writing proficiency and details regarding performance on individual components.

Both of these approaches represent writing assessments which are closely linked to the current writing skills curriculum and could be used easily by teachers to monitor progress and identify those children whose writing skills are

problematic. However, the author is not aware of how widely used these assessments are at the present time as they are not represented in commercially produced forms and data regarding their use by teachers is not available.

Chapter 9

Further considerations

9.1 Using the model to promote the value of developing children's spoken language skills

The stated aims for the national curriculum for English include specific reference to ensuring that all pupils use discussion in order to learn; that they should be able to elaborate and explain clearly their understanding and ideas, and that they are competent in the arts of speaking and listening, making formal presentations, demonstrating to others and participating in debate.

In line with the proposed construction of the 'Simple Model of Writing', the programmes of study for writing at key stages 1 and 2 consist of the two core dimensions of transcription (spelling and handwriting) and composition (articulating ideas and structuring them in speech and writing). It is stated that 'Effective composition involves articulating and communicating ideas'. (p.5) The writing-specific processes of planning, revision and evaluation are seen as additional rather than core elements. There is also an emphasis on the importance of speaking and listening across the range of subject areas and in particular the role that spoken language plays in underpinning the development of reading and writing. Teachers are expected to ensure the continual development of pupils' confidence and competence in spoken language and listening skills. They must assist them in making their thinking clear to themselves as well as to others, and teachers are tasked to ensure that pupils build secure foundations by using discussion to probe and remedy their

misconceptions. Pupils should also be taught to understand and use the conventions for discussion and debate. This would chime with the emphasis on the value of spoken language reflected within the proposed model.

Notwithstanding this greater emphasis on the role of spoken language in the learning process, particularly in relation to written language skills, researchers (Alexander, 2015; 2012; Smith, Hardman, Wall, & Mroz, 2004) have observed that the opportunities for students to orally express or deepen and develop their understanding of curriculum content are generally limited to responses to the teacher's use of questions to elicit specific answers to prompts related to the subject matter. Any extended expression of understanding or demonstration of skill tends to be through the medium of writing of some form. Opportunities to tell a story orally, to expound an argument in relation to a topic, or to give directions/instructions are relatively rare beyond the early years of a child's educational career where talking for it's own sake is given greater prominence. Whilst some specific programmes (e.g. Philosophy for Children or the use of debating clubs) directly target oratory skills, these are not widespread across the state education system in particular and the teaching of oral articulacy or 'oralcy' as a discrete skill continues to be neglected in the classroom (Alexander, 2015; 2012).

A recent survey of teacher's reported practices for the teaching of writing (Dockrell, Marshall, & Wyse, 2015) suggests that this emphasis on increased practice in articulating ideas via speech as a key element of teaching writing is not yet reflected in classroom practice. Teachers reported that they spent most

time working at the word level when delivering writing skills instruction. The concept of improving general spoken language skills as a key element of writing instruction was not mentioned by teachers. This is worrying, given the increased emphasis on spoken language within the programmes of study.

To some extent we have been here before. The value of interactive and extended oral contributions from pupils was emphasised within the National Literacy Strategy (NLS) Framework. Effective teaching was described as 'interactive' and an emphasis was placed on encouraging and extending pupils oral contributions. There was also an emphasis on a dynamic whole class interactive style of teaching, where pupils were encouraged to use spoken language to a much greater extent as part of effective learning (DfEE, 1998) . However, research suggests that this largely failed to materialise in the classroom practice of teachers (Smith, Hardman, Wall, & Mroz, 2004). In fact, their analysis of discourse between teachers and pupils within the NLS sessions showed that interactions tended primarily to take the form of what has been described as the 'recitation script' (Tharp & Gallimore, 1991). The 'recitation script' as described by Tharp and Gallimore, consists of three moves: the *initiation* which usually takes the form of a teacher question, a *response* when a pupil attempts to answer the question, and the *follow-up* where the teacher provides feedback to the pupil's response. This form of interaction limits the opportunities for extended spoken responses from pupils. Smith, Hardman, Wall, and Mroz (2004) reported that open questions made up just 10% of the questioning exchanges and that for 70% of the time the pupil responses lasted less than five seconds and were limited to three words or fewer.

This statutory guidance regarding the importance of developing pupils' competence in the two core dimensions of idea generation and the associated spoken linguistic expression and transcription skills as crucial activities in driving the development of writing quality is supported by the outcomes of the present study and can be communicated clearly with the proposed Simple Model of Writing.

Though appearing to be a subtle change in emphasis regarding the recognition of the contribution of spoken language in relation to improving writing skills, it may turn out to be a very powerful shift which may exert an effect on outcomes for a large number of children. By drawing the focus of teachers to a greater degree towards children's spoken language skills, particularly at an earlier stage, the likelihood of children progressing through the education system without the ability to articulate their thoughts effectively, or with unrecognised language difficulties, may reduce. Given the dangers, in terms of a significant negative impact on life chances, of inarticulacy or undiagnosed language difficulties this can only be a good thing.

9.2 Possible ways forward

How plausible is it to suggest that interventions placing greater emphasis on the development of general spoken language skills will have an impact on written language skills? Whilst on the surface this appears to be plausible, and is suggested in the construction of the proposed Simple Model of Writing, it has not yet been consistently demonstrated.

Clarke, Snowling, Truelove, & Hulme, (2010) have demonstrated the transfer effects of improvements in the understanding of spoken language to improvements in reading comprehension. This can be viewed as supportive of the theoretical premise underpinning the construction of the Simple Model of Reading. The researchers measured the effectiveness of three different approaches to improving reading comprehension skills when compared to the progress made by a control group. One intervention group was given specific tuition on reading comprehension, a second group received an intervention targeting the development of their understanding of oral language, and the third group received a programme of tuition that combined both approaches. The oral language intervention group made significantly greater progress with reading comprehension than did the control group and the other two intervention groups. Moreover, this relative advantage continued to improve in absolute terms after the teaching phase was complete.

If the theoretical premise of the constructed Simple Model of Writing is sound, in that the quality of a person's written language is largely (though not wholly) the product of their transcription skills and their spoken language skills, then for students whose transcription skills are appropriately developed, but whose written composition is poor, interventions that target the development of general oral language, particularly spoken language, should impact on writing quality. This has not been specifically explored, though the evidence in relation to the link between oral language levels and written language skills in children with SLI makes such a proposition appear plausible. Whilst the review of oral language interventions (see Education Endowment Foundation, ibid) report on

the positive impact of the approach on learning in general and specifically on gains in oral language skills and reading comprehension, they make no mention of writing skills.

Following a similar structure to that of the research into reading comprehension carried out by Clarke, Snowling, Truelove, & Hulme, (2010, ibid), this could be subjected to experimental exploration. Alongside a control group, the interventions could be a group working on understanding and using spoken language (not directly related to the act of writing), a group working specifically on writing skills, and a group experiencing a mixture of the two approaches. Clarke, Snowling, Truelove, & Hulme (ibid) enabled significant improvements in reading comprehension not by targeting reading comprehension itself, but by targeting general linguistic comprehension. In a similar fashion significant improvements in written composition could be enabled, not by targeting written composition skills solely, but by targeting, in addition, general linguistic understanding and expression via the production of spoken language.

Though not tested robustly, the plausibility of such a premise has been demonstrated in a small number of studies carried out as part of a doctoral dissertation (Yonek, 2008 - reported in Beck, McKeown, & Kucan, 2013). Testing the impact of two approaches to vocabulary instruction, ‘traditional’ and ‘robust’, it was reported that the robust instructional approach led to a significantly greater depth of knowledge for the target words. This increased depth in knowledge of the target vocabulary was found to transfer to the quality of the student’s written composition. Whilst both groups receiving vocabulary

instruction improved in terms of the quality of language used in the written composition tasks, the improvement was particularly marked for those receiving the ‘robust’ vocabulary instruction.

Following the same theoretical premise underlying the model, it would be possible to identify children who have strong spoken language skills but weak transcription skills. The intervention in this case would be to focus on the development of fluency in either handwriting, spelling, or both. Such propositions are testable and could be subjected to experimental scrutiny.

9.3 Separating Transcription Skills in an amended Simple Model of Writing

Within the depiction of the Simple Model of Writing the skills of handwriting and spelling have been represented as a single construct, ‘transcription skills’. This is In line with the premise set in the Simple Model of Reading (Tunmer & Gough, ibid) where phonological skills, phonic knowledge and word recognition are represented as a single construct, ‘word reading’. This fits with the aim of the present study in considering the plausibility of using a similarly constructed model for writing. The model is also in line with other models of writing (Hayes, 1996 & 2012; Berninger, 1999) in using the term transcription skills to represent handwriting and spelling. However, there was no significant correlation between handwriting skills and spelling skills in the cohort of participants in this study reflecting the fact that the two are discrete skills. Furthermore, in this cohort handwriting had no impact on the participant’s performance on the writing task. Therefore a case could be made for separating the two skills and representing

them within independent or twin models. A possible more parsimonious solution would be to separate the skills within the model (see figs. 27 & 28) with specific reference made to the need to consider each skills and it's relation to writing outcomes, taking into account the developmental changes in the relative weight of each factor. In figure 25 for example, the arrows representing spelling and handwriting are of equal thickness, representing, at this early stage of writing development the relative impact of both on writing outcomes. However, in figure 26 the arrow representing the handwriting element of transcription skills is less substantial than that representing spelling reflecting the relative impact of the two transcription skills at a more advanced stage of writing skills development.

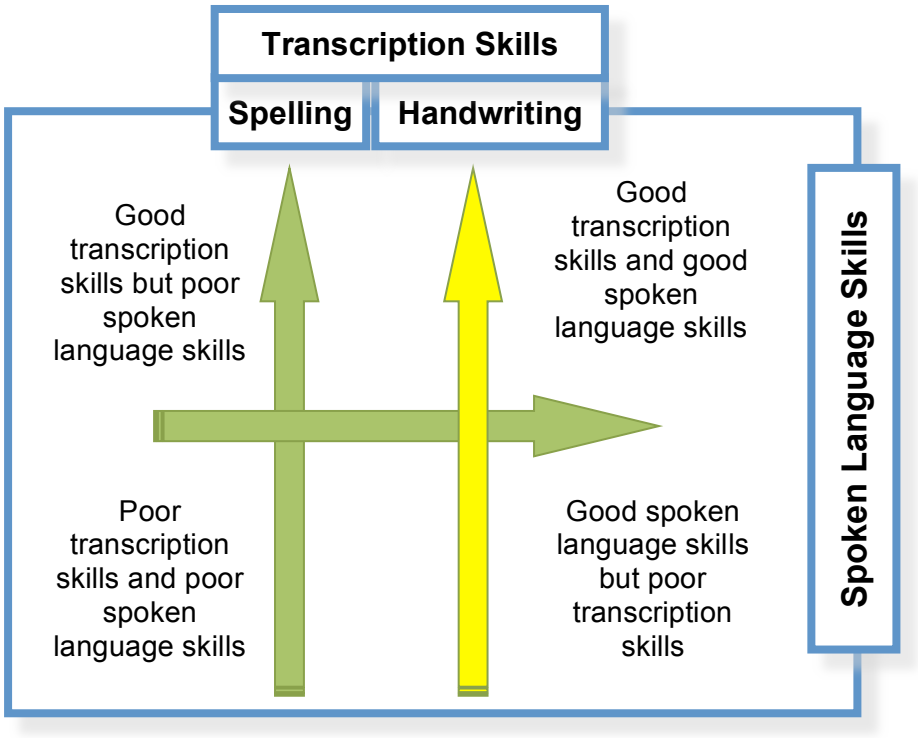


Fig. 25. Simple Model of Writing representing the balance between spelling and handwriting in emergent writers

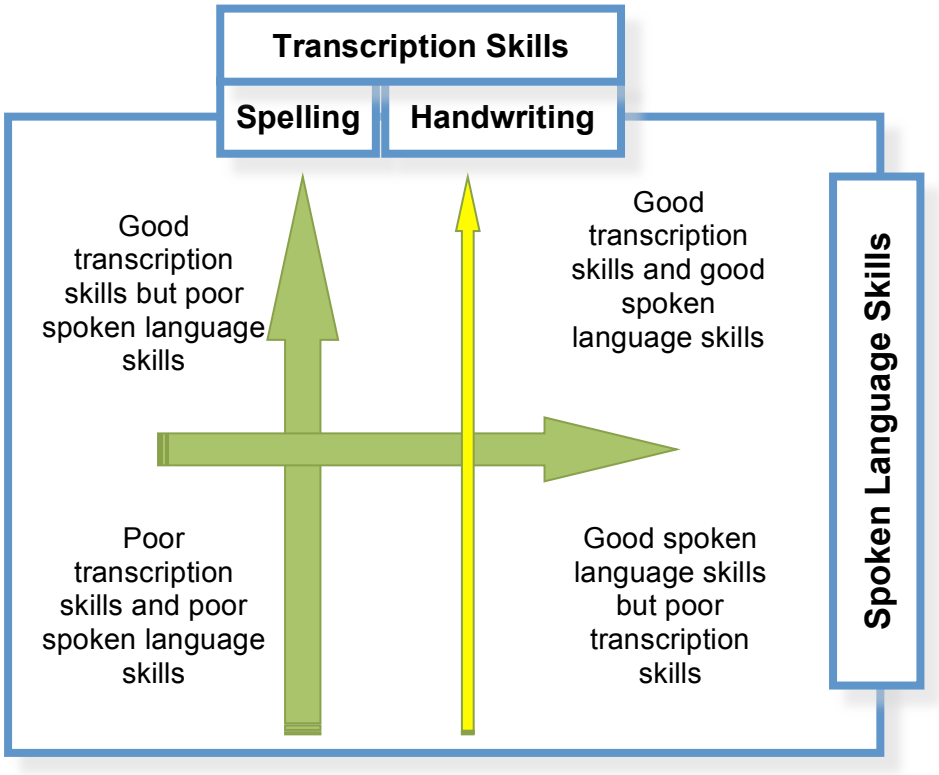


Fig. 26. Simple Model of Writing representing the balance between spelling and handwriting in developing writers

9.4 Developing a measure of spelling fluency

There may be a group of children whose writing skills are compromised by a lack of fluency with spelling, despite achieving appropriate accuracy levels in general spelling assessments. The concept of speed along with accuracy in regard to word spelling is largely absent from both assessment tools and intervention and teaching advice. This is illustrated in the statutory guidance for spelling contained with the current National Curriculum (DfE, 2013) which uses broad definitions of mastery, for example, that students '*know, apply and understand' (p.6)* with no performance criteria specified. The measure of mastery as regards spelling generally stops at the level of repeated accuracy with the student spelling the word correctly in a number of different contexts such as in a specific test of spelling and within general writing. However, if such accuracy is at the cost of undue effort then the cumulative level of cognitive

demand is likely to affect the quality of their written composition (Hayes, 2012, op. cit.; Medwell & Wray, 2009, op. cit.;Berninger, 1999, op. cit.).

To the author's knowledge, there are no age-related norms in regard to spelling fluency that identify the appropriate level of speed and accuracy for spelling a specific range of words for a particular age group. Given the constraining effects of effortful spelling on written composition, information for teachers in respect to spelling fluency would appear to be important as a means of identifying any problems with transcription skills. Along with measures of spelling accuracy, a key piece of information that a useful spelling skills assessment should seek to answer is the degree of cognitive ease with which the respondent can write the target words. Whilst some researchers have explored spelling speed along with accuracy, using Dutch spelling patterns and computer-based methods (Vaessen, 2010), this was in the context of experimental manipulation of variables rather than to develop spelling fluency measures. To the author's knowledge, norm related tests of fluency in respect to English spelling that could be used readily by teachers have yet to be developed.

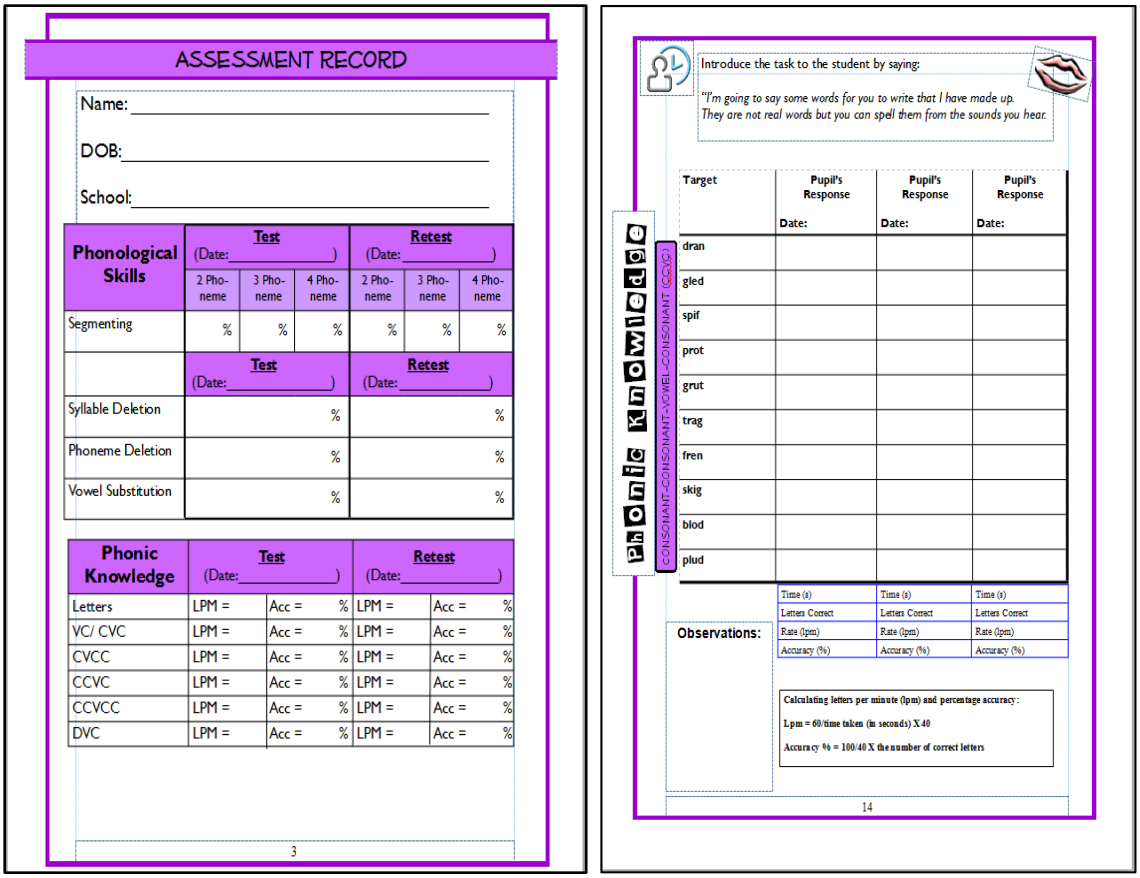
Whilst in the domain of spelling this is a difficult construct to operationalize, as an outcome of this research the author has incorporated measures of fluency within the design of a diagnostic spelling assessment tool, the Essential Spelling Skills Assessment (ESSA). This forms an integral part of a suite of literacy skills assessment and intervention planning tools linked to the Simple Model of Reading and the Simple Model of Writing which is proposed in this study (see Appendix E). The tool is currently being piloted in two primary

schools in regard to testing the practicalities of the administration procedures. Once feedback and appropriate amendments are made, fluency data will be collected for specific age groups.

The Essential Spelling Skills Analysis (ESSA) is designed to gather relevant information on three key aspects related to the development of age appropriate fluent spelling skills. One is the ability to translate phonemes, a letter or letter combination sound, into the corresponding grapheme(s). For example, when thinking about writing the graphical representation of the sound ‘m’, as in ‘man’, or the sound ‘ch’ as in ‘chat’ the correct letter or letter combination can be written. This is referred to as phonic knowledge or knowledge of the phonic code. A second factor is the ability to identify or ‘segment’ the sequence of phonemes within a single word. For example, when hearing the word ‘chat’ the individual phonemes making up the word can be articulated ‘chat’ = ‘ch’- ‘a’ – ‘t’. This is referred to as a phonological skill, specifically phonemic awareness. The third factor assessed is the ability to be able to deploy this phonic knowledge and these phonological skills with a high level of automaticity, taking up minimal amounts of conscious cognitive effort so that higher order processing can take place such as planning and executing a written piece.

The ESSA comprises of an initial section covering the phonological skills most closely related to spelling, and two levels of assessment items gathering samples of the respondent’s phonic knowledge. Level one covers the basic phonic code where sound to letter correspondences are regular. Level two covers the more advanced elements of the code where phoneme-grapheme

correspondences are more variable. The level one assessment makes use of pseudo-words representing the relevant phonic structures starting with single letters in isolation and progressing through vowel-consonant (VC, e.g. ‘ot’), to consonant-vowel-consonant (CVC, e.g. ‘bem’), consonant-vowel-consonant-consonant (CVCC, e.g. ‘rost’), consonant-consonant-vowel-consonant (CCVC, e.g. ‘prot’), consonant-consonant-vowel-consonant-consonant (CCVCC, e.g. ‘blent’), and digraph-vowel-consonant (DVC, e.g. ‘shap’). Calculations for determining speed and accuracy for each level are included in the student assessment record booklet (see sample assessment summary page, and the test item page for ccvc words. Figure 27).



ASSESSMENT RECORD

Name: _____

DOB: _____

School: _____

Phonological Skills	Test (Date:)			Retest (Date:)		
	2 Pho-neme	3 Pho-neme	4 Pho-neme	2 Pho-neme	3 Pho-neme	4 Pho-neme
Segmenting	%	%	%	%	%	%
	Test (Date:)			Retest (Date:)		
Syllable Deletion	%			%		
Phoneme Deletion	%			%		
Vowel Substitution	%			%		

Phonic Knowledge	Test (Date:)		Retest (Date:)	
Letters	LPM =	Acc = %	LPM =	Acc = %
VC/ CVC	LPM =	Acc = %	LPM =	Acc = %
CVCC	LPM =	Acc = %	LPM =	Acc = %
CCVC	LPM =	Acc = %	LPM =	Acc = %
CCVCC	LPM =	Acc = %	LPM =	Acc = %
DVC	LPM =	Acc = %	LPM =	Acc = %

3

Introduce the task to the student by saying:

“I’m going to say some words for you to write that I have made up. They are not real words but you can spell them from the sounds you hear.

Phonic Knowledge

CONSONANT-CONSONANT-VOWEL-CONSONANT (CCVC)

Target	Pupil’s Response Date:	Pupil’s Response Date:	Pupil’s Response Date:
dran			
gled			
spif			
prot			
grut			
trag			
fren			
skig			
blod			
plud			
	Time (s)	Time (s)	Time (s)
	Letters Correct	Letters Correct	Letters Correct
	Rate (lpm)	Rate (lpm)	Rate (lpm)
	Accuracy (%)	Accuracy (%)	Accuracy (%)

Observations:

Calculating letters per minute (lpm) and percentage accuracy:

Lpm = 60/time taken (in seconds) X 40

Accuracy % = 100/40 X the number of correct letters

14

Figure 27. Sample pages from the ESSA student record book (see Appendix E)

The ESSA level two assessment systematically assesses children's knowledge of the graphical representation of those phonemes where the sound to script relationship is more variable. For each phoneme covered in the test a range of probe words are used starting with a word which contains the most common graphical representation of the phoneme, followed by words containing alternative representations of the phoneme. For example, for the phoneme 'aw' most commonly written as 'aw' as in the word 'saw', the target words would include *law, fraud, fought, taught, call, walk*. Whilst not exhaustive, the items cover the majority of spelling variations for each specified phoneme (Ziegler, Stone, & Jacobs, 1997; Berndt, Reggia, & Mitchum, 1987). Determining spelling efficiency in addition to accuracy at this level is a more challenging proposition given the greater degree of complexity and variety of phonic structures. However, a general guide promoting the consideration of efficiency is provided in the accompanying manual. The piloting procedure to determine the practicalities of collecting fluency data at this level will be informed by the feedback from piloting the Level One assessment.

Following a similar approach taken by Medwell and Wray (2014) in regard to their efforts to collect fluency data for handwriting, in addition to providing detailed diagnostic information, a secondary objective, informing the design of the ESSA is to seek the establishment, if possible, of some clear indicators of the level of spelling fluency typically associated with a range of age-groups. It may be possible to identify, at least tentatively, a threshold of age-related performance which could be used to identify children whose spelling efficiency is a cause for concern.

Chapter 10

Conclusion

10.1 Limitations of the study

Given that the recruitment of participants was opportunistic, the cohort of participants in this study may not be representative of the 'typical' spread of attainment in terms of transcription skills, spoken language skills and written language skills for the broader cohort of children of that age/year group. Both of the schools that participated in the study were judged to be 'outstanding' and had a very low proportion of children with special educational needs within the year group.

In theory, because each participant's individual profile was the key factor used within the statistical analysis when identifying the ipsative profiles, this result should be generalizable to other children of the same age and stage of education. However, the impact of good quality and very intensive teaching, particularly of writing skills, in this particular cohort at the point at which they participated in the study may have affected the balance of each individual's relative skills towards stronger written language skills.

The relatively small size of the cohort participating in the study inevitably brings compromises in terms of statistical robustness and generalizability. Generally speaking, with this sort of regression analysis, 'the more, the better' in terms of numbers of participants. However, smaller scale practitioner research such as this can contribute to the wider collection of data.

Inevitably, given the aim of making the model as simple as possible to operationalize in terms of assessments and interventions, a number of other elements contributing to written composition have been omitted. This is not to discount their importance, but to draw greater attention to the elements represented within the model. However, as discussed earlier, there is a danger of a narrowing of focus.

10.2 Reflections

During the course of conducting the research a number of points emerged. The difficulty in quantifying a person's performance in complex areas such as spoken language and written composition was highlighted. Despite using the criteria guiding the scoring of the WIAT II Oral Expression and Written Expression subtests used in the study, the original marker and the two moderators produced sometimes significantly different scores on the written test in particular. All three of the markers were experienced educational psychologists familiar with test scoring procedures. The Holistic scoring of the written passage, whilst allowing greater scope to recognise the quality of ideas expressed, left greater scope for individual judgement. Whilst the analytic scoring rubric was much more specific and left much less room for differing interpretations from markers, the cost was a greater emphasis and value placed on the more mechanical and technical aspects of writing whilst missing the quality of the ideas expressed. It is likely that the high reliability figures for the test are based primarily on the analytic scoring rubric. However, in this instance

it may be the case that more is less, where the more detailed analytic scoring misses important aspects of linguistic sophistication.

The participants' performance on the Oral Expression test is greatly influenced by the rapport they develop with the assessor. The interactive nature of the assessment reflects the fact that the use of spoken language is primarily a reciprocal social activity. The scoring rubric used with the test provides marks for the mention of specific items or actions, for example when asked to describe to the researcher how to make a peanut butter and jam sandwich. These were sometimes facts or specifics that could be inferred from the context. It may be the case that the participants had the linguistic sophistication to articulate the process in more detail, but, despite instructions to do so, found it difficult to suspend the assumption of shared understanding which applies when communicating with another person who shares a common language and situational understanding.

The variability of, and difficulty in interpreting outcomes of research within the sphere of education is a challenge for practitioners working directly in schools. The huge and continuous volume of research and opinion based literature being produced in the area is daunting. In particular, the concept of 'evidence-based practice' within education is problematic. When considering what approaches might be useful in supporting children's progress in the key skill domains represented in the model, the quality of the research and the evidential criteria are inconsistent.

The outcomes of this study lend a degree of theoretical and empirical support to the use of the proposed Simple Model of Writing as a tool for effectively depicting the relationships between several key components that contribute to writing quality. The explicit inclusion within the model of general spoken language skills lends further support to the emphasis placed on the importance of spoken language within the new primary national curriculum in England. However, the concern remains that, despite the increased emphasis on spoken language, the lack of statutory assessment tools monitoring student progress in this domain may not lead to the intended change in teacher behaviour in regard to addressing spoken language skills with greater vigour. By making explicit the link to writing outcomes, this model 'piggy backs' general spoken language skills onto a secondary outcome which has high status within the testing and reporting regime, thus potentially increasing its status by close affiliation.

Dr. Ben Goldacre, when asked in 2013 by the then Secretary of State for Education (Michael Gove) and the DfE to look at how to improve the use of research in schools produced a paper (published on the website www.badscience.net) which made a number of recommendations. These included, among others, empowering teachers to participate in research, disseminating the results of research more effectively, removing the barriers between teachers and researchers, and giving teachers a greater say in the research agenda by identifying questions that are relevant to their particular needs. The degree to which this particular construction of a Simple Model of Writing will address these issues and influence the actions of teachers in this respect and, by dint of that, the outcomes for children will depend on the degree

to which it is disseminated and the ease with which it can be understood and applied as an assessment and intervention planning structure. The model aims to produce a certain degree of simplicity and clarity out of complexity and therefore promote clarity of both thought and action on the part of teachers. This attempts to address one of the possible reasons for the gap between research and practice within education, that relevant research is not available in a readily accessible form (Mitchell, 2014). The assessment and training materials, within which the model sits, (see Appendix E) and poster presentation (Figure 28) are designed specifically to deliver this outcome.

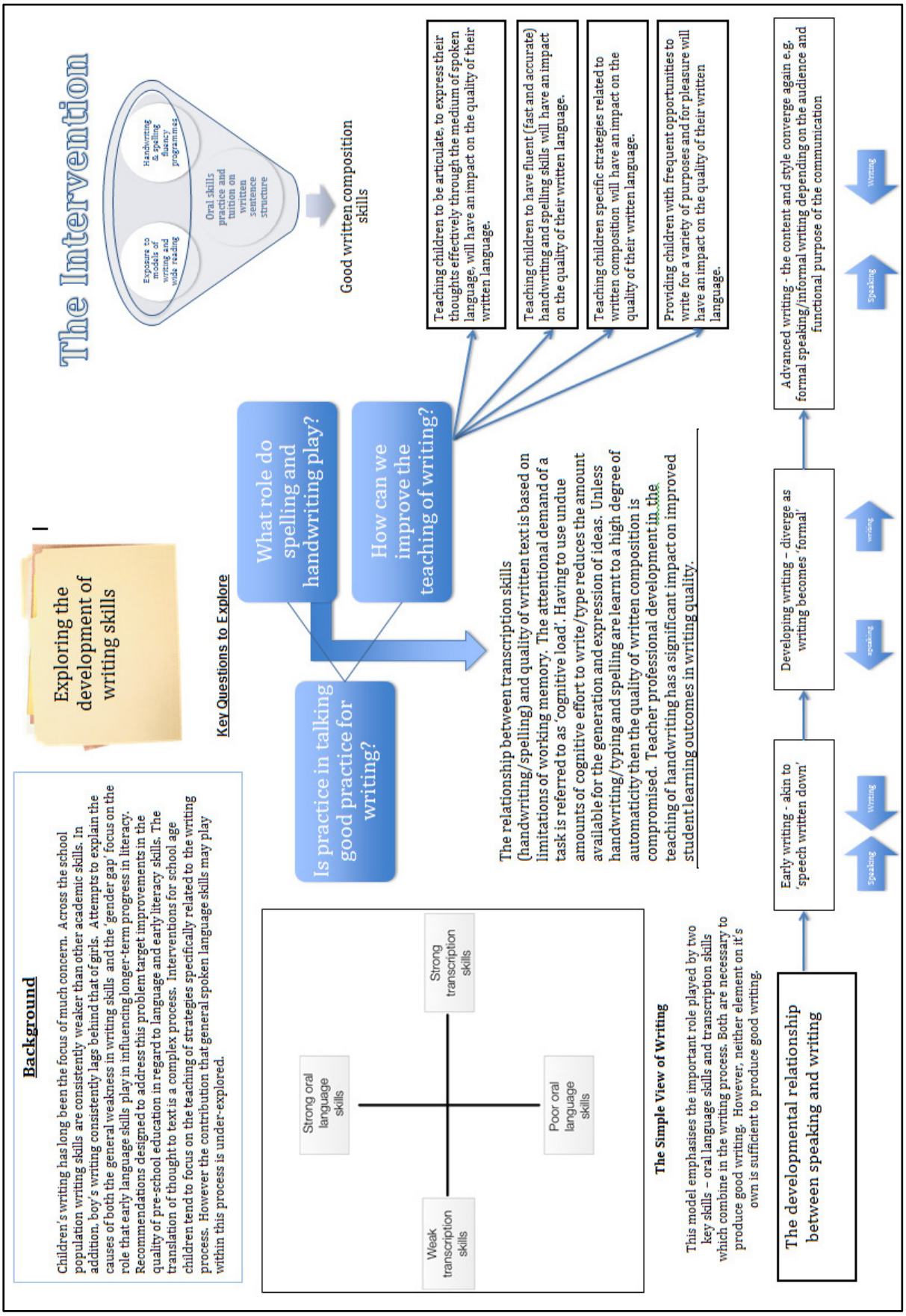


Figure 28. Poster presentation

The danger of ‘reductionism’ is ever present when sifting a complex behaviour into individual components as though it were a result of concatenation rather than synthesis. However, this has to be balanced against the pragmatic demands of applying psychological theory and research within an education system for the purpose of achieving improved outcomes for children. Whilst all children would benefit from increasing their ability to communicate thoughts effectively in spoken and written form, those who are most likely to benefit from an increased focus on articulacy are those who Hackman (2015) describes as the shy, the socially deprived, and the newly arrived.

Given the recent concerns regarding the replication of findings within the social sciences (Pashler & Wagenmakers, 2012), it is reassuring to find a high level of concordance between this study and others regarding the influence of oral language skills and transcription skills on writing quality. Given the varied range of measures and methodologies used across the studies, this lends a degree of robustness to the theoretical model. Such conceptual replications, where replications try to operationalize or explore the underlying theoretical variables using different manipulations and/or different measures, (Stroebe & Strack, 2014, p. 60) are an important element of scientific progress.

10.3 Closing thoughts

To return to the original economic metaphor used to frame the research question, ‘Speaking and Writing: Different Currencies, or Two Sides of the Same Coin?’ Given that spoken language uniquely accounted for 10% of the variance in the quality of written composition skills, the outcome of this

exploratory study suggests that they may best be thought of as falling into the ‘different currencies’ branch of this metaphorical distinction with transcription skills, particularly spelling, acting as the exchange rate mechanism. The higher the exchange rate, the more you get when converting the currency of thoughts into the currency of compositional quality. Sticking with the monetary metaphor, the British currency and the Euro currency, are both forms of money which serve the same functional outcome (i.e. to purchase goods or pay for services). In a similar fashion speaking and writing serve the same functional outcome, to express and communicate thought. As Berninger (2010) said, the two systems of expressive language are connected, but unique.

It might be best for us to think primarily about teaching children to express thoughts through language, with form, mode and function being secondary rather than primary considerations. Instead of talking about teaching literacy, we could talk about teaching children to understand language, through the medium of text or spoken language, and to express language through the medium of talking or writing. Berninger, (2000) expressed this eloquently in describing the four interconnected language systems as ‘language by ear, eye, hand, and mouth’. There appears to be an unhelpful linguistic distinction between the terms ‘literacy’ and ‘language’ which, in the author’s experience, encourages people to treat the two as separate entities. By using the depiction within the proposed simple model, the importance of both forms of expressive language, speaking and writing, may be given greater emphasis and balance within teacher awareness and practice.

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Appendix A: Ethics approval/Letters to participants & parents

SCHOOL OF PSYCHOLOGY
Dean: Professor Mark N. O. Davies, PhD, CPsychol, CBiol.

UEL
University of East London
www.uel.ac.uk

School of Psychology

Professional Doctorate Programmes

To Whom It May Concern:

This is to confirm that the Professional Doctorate candidate named in the attached ethics approval is conducting research as part of the requirements of the Professional Doctorate programme on which he/she is enrolled.

The Research Ethics Committee of the School of Psychology, University of East London, has approved this candidate's research ethics application and he/she is therefore covered by the University's indemnity insurance policy while conducting the research. This policy should normally cover for any untoward event. The University does not offer 'no fault' cover, so in the event of an untoward occurrence leading to a claim against the institution, the claimant would be obliged to bring an action against the University and seek compensation through the courts.

As the candidate is a student of the University of East London, the University will act as the sponsor of his/her research. UEL will also fund expenses arising from the research, such as photocopying and postage.

Yours faithfully,

Dr. Mark Finn

Chair of the School of Psychology Ethics Sub-Committee

Stratford Campus, Water Lane, Stratford, London E15 4LZ
tel: +44 (0)20 8223 4966 fax: +44 (0)20 8223 4937
e-mail: mno.davies@uel.ac.uk web: www.uel.ac.uk/psychology

Dear parent,

We are investigating the relationship between speaking skills and writing skills in order to identify the best ways to support pupils in developing good communication skills. In collaboration with a doctorate student at the University of East London (John Price, who is also an educational psychologist working for the London Borough of Havering) we plan to collect samples of speaking and writing skills from pupils in our Year 5 group. This will involve them working both individually and in groups to complete a spelling, handwriting, speaking and writing task. The tasks should take around 50 minutes to complete in total and the pupils will complete them in a series of short sessions. We are asking for your permission for your child's participation in the study. It is important that both you and your child know that participation is entirely voluntary and that you should not feel under any pressure to participate.

You will be informed of the dates when the tasks are to take place and will have the opportunity to withdraw your child from the study at any time up to this point without having to give a reason with no disadvantage at all to your child (once data is collected the researcher reserves the right to use the anonymised data in the write-up of the study and in any further analysis that may be conducted by the researcher). If the researcher identifies any significant issues that have not previously been identified, you (and school staff) will be informed and offered a meeting with the researcher. All interviews with pupils will be held in settings within the school that are overlooked by staff. Whilst some of the tasks require individual participation, where appropriate, tasks will be administered in group settings. The purpose of the tasks will be explained to the pupils and they will be given an opportunity to ask questions to clarify any points.

All of the data collected from the pupils will be anonymised within the analysis, with individual pupils being referred to by a numerical label only within the database. The school will also be anonymised by the use of a numerical label. The source data will be stored in a secure school environment with individual names or identifying information taken out and replaced with numerical labels as stated above. This will be done before the source data is taken away from the school. The Head teacher will be left with the key linking the numerical labels to student names. Any data, either electronic or paper based, taken away from the interviews by the researcher will contain numerical labels only. If it is necessary to record the speaking task, the recordings will be typed out and anonymised (again through the use of numbers instead of names) and the original recordings will be deleted. If pupil identification is required beyond that point in time, the researcher will have to request this from the Head teacher. Following description and analysis of the data sufficient for thesis submission (following agreement with the UEL Doctoral supervisor) the information will be kept securely for a period of up to five years to be available to the researcher for publication purposes if appropriate. Following this period it will be disposed of securely.

Please feel free to ask John any questions (see contact details below). If you are happy to continue you will be asked to sign a consent form prior to your participation. Please retain this invitation letter for reference.

If you have any questions or concerns about how the study has been conducted, please contact the study's supervisor [Sharon Cahill, School of Psychology, University of East London, Water Lane, London E15 4LZ. Tel: 0208 8223 4493. Email: s.cahill@uel.ac.uk]
or
Chair of the School of Psychology Research Ethics Sub-committee: Dr. Mark Finn, School of Psychology, University of East London, Water Lane, London E15 4LZ.
(Tel: 020 8223 4493. Email: m.finn@uel.ac.uk)

Thank you in anticipation.

(contact details – john.price@havering.gov.uk tel: 433 955)

Consent to participate in a research study

[The Links Between Speaking and Writing: An exploratory Study]

I have the read the information sheet relating to the above research study and have been given a copy to keep. The nature and purposes of the research have been explained to me, and I have had the opportunity to discuss the details and ask questions about this information. I understand what is being proposed and the procedures in which my child will be involved have been explained to me.

I understand that my child's involvement in this study, and particular data from this research, will remain strictly confidential. Only the researcher(s) involved in the study will have access to identifying data via the Head teacher. It has been explained to me what will happen once the research study has been completed.

I hereby freely and fully consent to my child to participate in the study which has been fully explained to me. Having given this consent I understand that I have the right to withdraw my child from the study at any time without disadvantage and without being obliged to give any reason. [I also understand that should I withdraw some time after completion of the data collection, the researcher reserves the right to use my child's anonymous data in the write-up of the study and in any further analysis that may be conducted by the researcher].

Parental Name (BLOCK CAPITALS)

……

Parental Signature

……..

Pupil's Name (BLOCK CAPITALS)

……..

Researcher's Signature

……

Date: ……..……

Hello

We're planning to do some research in your school to help us find out how talking and writing go together. We'd really like your help with this job. We'd like to get samples of your skills in handwriting, spelling, speaking and writing to help us with our investigation. The research should help teachers at your school and other schools to understand more about the best way to teach children how to be good writers. The tests might take about an hour to complete. Your results will not be shared with anybody else within the school and the researcher will make sure that when the research is published each person's results are anonymous (nobody will be able to find out who they belong to). The only time your results may be shared with you, your parents and teachers is if the researcher thinks that you might benefit from some extra help with something. Your results (we call it data) will be put into a computer which will do complicated mathematical calculations to see how handwriting, spelling, talking and writing are related.

If, after talking with your Mum and/or Dad you would like to take part in the project you could put a circle around the 'I would like to take part in the project' below and send this back with the form that your mum or dad will sign if they're happy for you to take part. If you'd rather not take part, that's fine, you could just put a circle round the 'No Thank you' on the line to let us know. If you do volunteer you'll have a chance to ask questions before we start the project. Also, if you change your mind at any time during the project and would like to stop participating that's not a problem. Just let us know and that will be fine.

I would like to take part in the project

No thank you

Appendix B: List of Instruments Used To Collect Data

Detailed Assessment of Speed of Handwriting (DASH) (Barnett, Henderson, Scheib, & Schulz, 2007)**.** The test consists of 4 core tasks:

- Copy Best (CB) Words per minute. The pupil has to copy a prompt sentence as many times as they are able within the 2 minutes allowed, using their best quality handwriting.
- Alphabet Writing (AW). The pupil has to write out as many of the lower case letters of the alphabet in sequence as possible within the time allowed (1 minute).
- Copy Fast (CF) Words per minute. The pupil has to copy a prompt sentence as quickly as possible in a 2 minute timeframe.
- Free Writing (FW) Words per minute. Pupils are asked to write on a topic of their choice for 10 minutes.

Wechsler Individual Attainment Test (second UK Edition) WIAT II (Wechsler, 2001).

WIAT II Word Spelling subtest. The subtest is based on three measures (dependent upon the age related starting point), the ability to spell dictated letters, letter blends and words. The inclusion of homonyms requires the respondent to use the context clues provided by the dictated sentences in order to identify the correct spelling of a word.

WIAT II Oral Expression. The subtest is based on three tasks: Oral Word Fluency, Giving Directions, and Visual Passage Retell. For Oral Word Fluency, the child generates words orally and quickly in a designated semantic category. For Giving Directions, the child describes orally a sequence of steps necessary to complete a familiar action or task designated by the examiner. For Visual Passage Retell, the child looks at a series of cartoon pictures and tells a story about them, which is scored for detail and accuracy in depicting the content of the pictures in sequence.

WIAT II Written Expression. This subtest includes three written expression tasks. For Written Word Fluency, the child generates in writing as many words as possible within a given time limit for a designated category. For Sentence Combining, the child combines two or three separate sentences to create one new sentence with the same meaning. For Paragraph Writing, the child writes about a prompt within a given time limit.

Appendix C: Introduction to Tasks

"Today we're going to complete a number of tasks. The reason we're doing the tasks is so that we can investigate the links between speaking and writing. We're really pleased that you are helping us with this investigation, thank you. Though the tasks might feel a bit like tests we're not testing you. The tasks are there just as a way to get samples of your skills in handwriting, spelling, speaking and writing to help us with our investigation. This research that you're helping us with will help your school and other schools to understand more about the best way to teach writing skills. Do you have any questions you'd like to ask before we begin?"

(Individual task instructions were administered in accordance with the instructions contained within the test manuals).

Appendix D: SPSS Outputs

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
Holistic	2.97	.945	74
Speaking	32.07	7.037	74
Spelling	34.86	6.734	74
HWriting	43.57	16.566	74
OralFluency	26.03	6.523	74
WordCount	60.96	22.492	74

Correlations

		Holistic	Speaking	Spelling	HWriting	OralFluency	WordCount
Holistic	Pearson Correlation	1	.418**	.471**	-.011	.202	.665**
	Sig. (2-tailed)		.000	.000	.926	.084	.000
	N	74	74	74	74	74	74
Speaking	Pearson Correlation	.418**	1	.201	-.121	.509**	.187
	Sig. (2-tailed)	.000		.085	.305	.000	.111
	N	74	74	74	74	74	74
Spelling	Pearson Correlation	.471**	.201	1	.211	.189	.299**
	Sig. (2-tailed)	.000	.085		.071	.107	.010
	N	74	74	74	74	74	74
HWriting	Pearson Correlation	-.011	-.121	.211	1	.096	.080
	Sig. (2-tailed)	.926	.305	.071		.417	.496
	N	74	74	74	74	74	74
OralFluency	Pearson Correlation	.202	.509**	.189	.096	1	.228
	Sig. (2-tailed)	.084	.000	.107	.417		.051
	N	74	74	74	74	74	74
WordCount	Pearson Correlation	.665**	.187	.299**	.080	.228	1
	Sig. (2-tailed)	.000	.111	.010	.496	.051	
	N	74	74	74	74	74	74

**. Correlation is significant at the 0.01 level (2-tailed).

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
Holistic	2.97	.945	74
Spelling	34.86	6.734	74
HWriting	43.57	16.566	74
Speaking	32.07	7.037	74

Correlations

		Holistic	Spelling	HWriting	Speaking
Pearson Correlation	Holistic	1.000	.471	-.011	.418
	Spelling	.471	1.000	.211	.201
	HWriting	-.011	.211	1.000	-.121
	Speaking	.418	.201	-.121	1.000
Sig. (1-tailed)	Holistic	.	.000	.463	.000
	Spelling	.000	.	.035	.043
	HWriting	.463	.035	.	.153
	Speaking	.000	.043	.153	.
N	Holistic	74	74	74	74
	Spelling	74	74	74	74
	HWriting	74	74	74	74
	Speaking	74	74	74	74

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	HWriting, Spelling[b]	.	Enter
2	Speaking[b]	.	Enter

a. Dependent Variable: Holistic

b. All requested variables entered.

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.484[a]	.234	.213	.838	.234	10.868	2	71	.000
2	.578[b]	.334	.305	.788	.099	10.413	1	70	.002

a. Predictors: (Constant), HWriting, Spelling

b. Predictors: (Constant), HWriting, Spelling, Speaking

c. Dependent Variable: Holistic

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.274	2	7.637	10.868	.000[b]
	Residual	49.892	71	.703		
	Total	65.166	73			
2	Regression	21.735	3	7.245	11.677	.000[c]
	Residual	43.431	70	.620		
	Total	65.166	73			

a. Dependent Variable: Holistic

b. Predictors: (Constant), HWriting, Spelling

c. Predictors: (Constant), HWriting, Spelling, Speaking

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.831	.540		1.540	.128					
	Spelling	.069	.015	.495	4.661	.000	.471	.484	.484	.955	1.047
	HWriting	-.007	.006	-.116	-1.088	.280	-.011	-.128	-.113	.955	1.047
2	(Constant)	-.333	.622		-.535	.594					
	Spelling	.059	.014	.418	4.068	.000	.471	.437	.397	.903	1.107
	HWriting	-.003	.006	-.060	-.590	.557	-.011	-.070	-.058	.928	1.078
	Speaking	.044	.014	.326	3.227	.002	.418	.360	.315	.932	1.074

a. Dependent Variable: Holistic

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Speaking	.326[b]	3.227	.002	.360	.932	1.074	.903

a. Dependent Variable: Holistic

b. Predictors in the Model: (Constant), HWriting, Spelling

Collinearity Diagnostics[a]

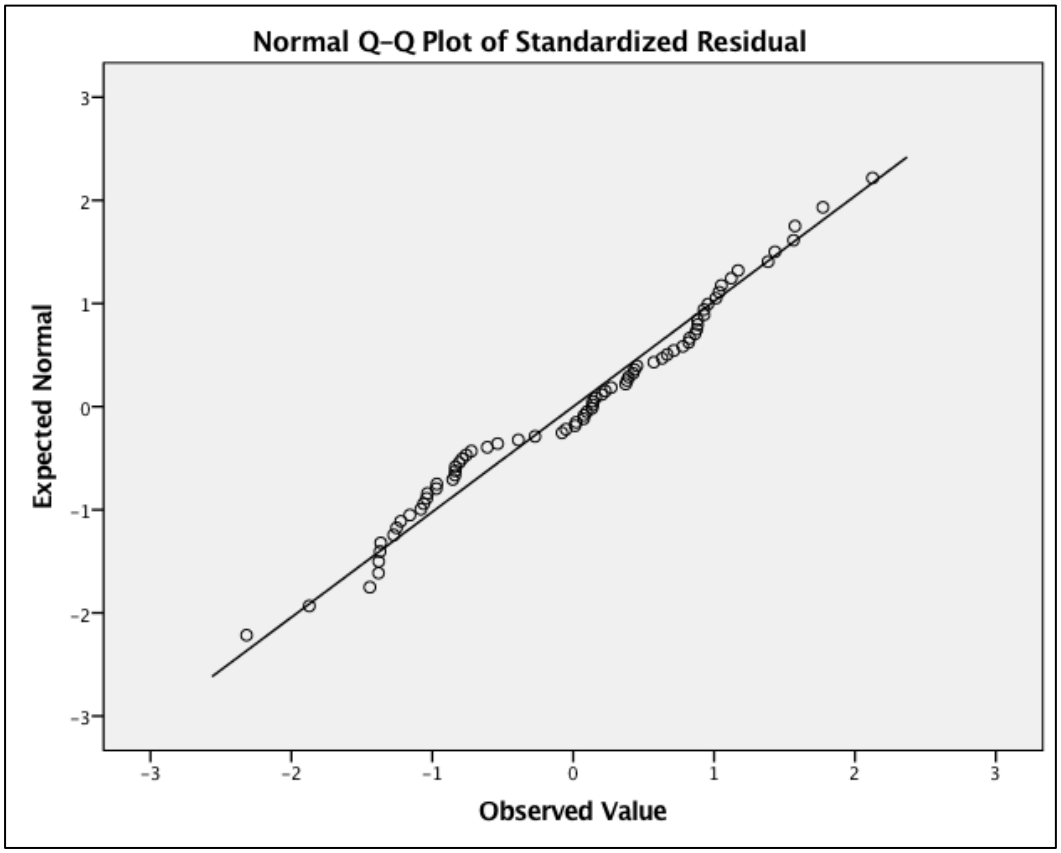
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Spelling	HWriting	Speaking
1	1	2.900	1.000	.00	.00	.01	
	2	.082	5.959	.06	.07	.98	
	3	.018	12.740	.94	.92	.00	
2	1	3.851	1.000	.00	.00	.01	.00
	2	.105	6.048	.01	.01	.79	.09
	3	.029	11.575	.01	.59	.16	.62
	4	.015	15.838	.98	.40	.05	.29

a. Dependent Variable: Holistic

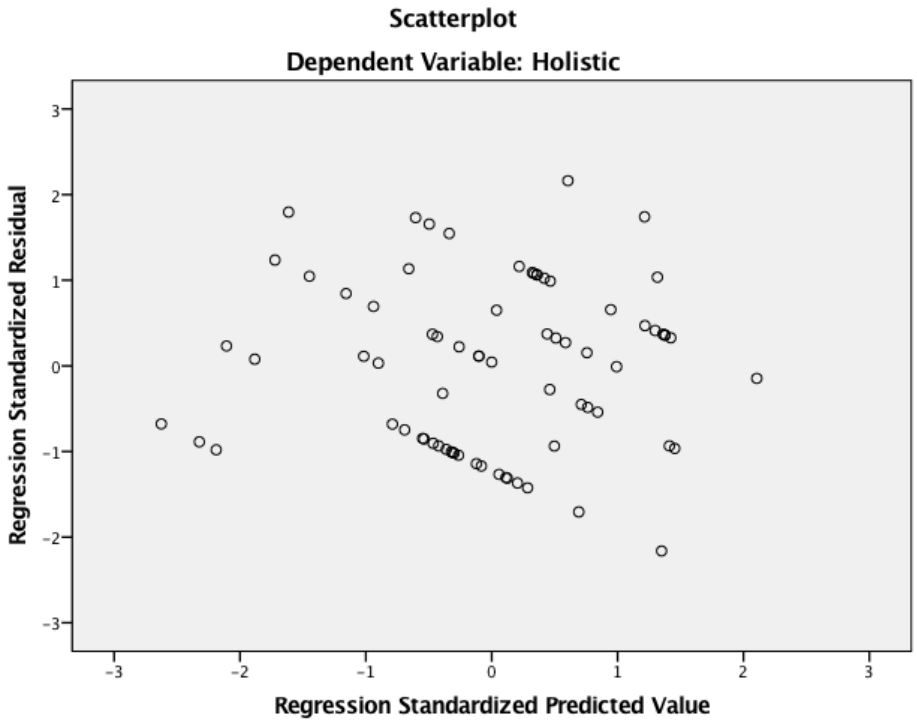
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.53	4.11	2.97	.546	74
Std. Predicted Value	-2.625	2.105	.000	1.000	74
Standard Error of Predicted Value	.093	.323	.177	.049	74
Adjusted Predicted Value	1.64	4.13	2.97	.545	74
Residual	-1.702	1.704	.000	.771	74
Std. Residual	-2.161	2.163	.000	.979	74
Stud. Residual	-2.229	2.267	.001	1.007	74
Deleted Residual	-1.811	1.872	.001	.816	74
Stud. Deleted Residual	-2.297	2.338	.001	1.016	74
Mahal. Distance	.034	11.288	2.959	2.229	74
Cook's Distance	.000	.127	.015	.021	74
Centered Leverage Value	.000	.155	.041	.031	74

a. Dependent Variable: Holistic



Shapiro-Wilk Test of Normality Sig. = .090



T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Holistic	female	36	2.97	1.000	.167
	Male	38	2.96	.903	.147

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Holistic	Equal variances assumed	.221	.640	.053	72	.958	.012	.221	-.429	.453
	Equal variances not assumed			.053	70.301	.958	.012	.222	-.431	.454

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
Speaking	32.07	7.037	74
AES	16.22	2.407	27

Correlations

		Speaking	AES
Speaking	Pearson Correlation	1	.344
	Sig. (2-tailed)		.079
	N	74	27
AES	Pearson Correlation	.344	1
	Sig. (2-tailed)	.079	
	N	27	27

Correlations

Descriptive Statistics

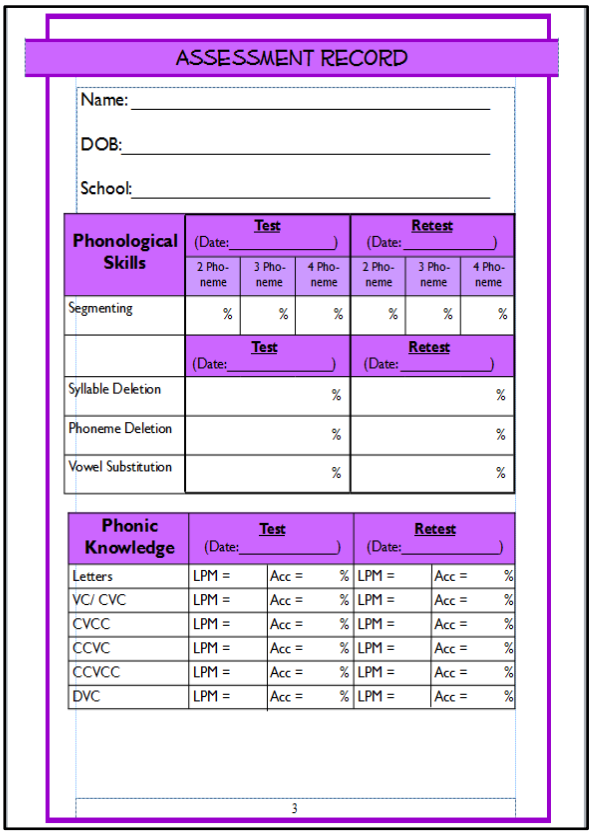
	Mean	Std. Deviation	N
Holistic	2.97	.945	74
AEW	17.75	3.997	28

Correlations

		Holistic	AEW
Holistic	Pearson Correlation	1	.290
	Sig. (2-tailed)		.134
	N	74	28
AEW	Pearson Correlation	.290	1
	Sig. (2-tailed)	.134	
	N	28	28

Appendix E: Representative excerpts of the Literacy Skills Assessment & Intervention' course materials

This appendix contains two of the pages of the Essential Spelling Skills Assessment (ESSA - Booklet 1). It also includes a copy of the booklet given to participants attending a comprehensive literacy skills assessment and intervention course. The booklet is updated/amended for each course. A full set of the assessment tools and associated booklets have been submitted with the printed copies of the thesis. The construction of the course materials and delivery of the course provide the context within which the research question arose i.e. is it legitimate to use the depiction of the proposed Simple Model of Writing within the integrated course materials and training?



ASSESSMENT RECORD

Name: _____

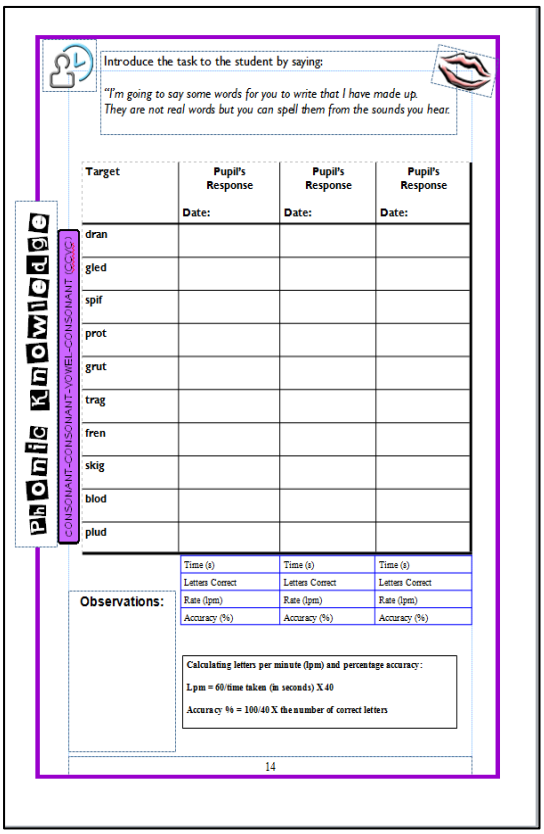
DOB: _____

School: _____

Phonological Skills	Test (Date: ____)			Retest (Date: ____)		
	2 Pho-neme	3 Pho-neme	4 Pho-neme	2 Pho-neme	3 Pho-neme	4 Pho-neme
Segmenting	%	%	%	%	%	%
	Test (Date: ____)			Retest (Date: ____)		
Syllable Deletion	%			%		
Phoneme Deletion	%			%		
Vowel Substitution	%			%		

Phonic Knowledge	Test (Date: ____)		Retest (Date: ____)	
Letters	LPM =	Acc = %	LPM =	Acc = %
VC/ CVC	LPM =	Acc = %	LPM =	Acc = %
CVCC	LPM =	Acc = %	LPM =	Acc = %
CCVC	LPM =	Acc = %	LPM =	Acc = %
CCVCC	LPM =	Acc = %	LPM =	Acc = %
DVC	LPM =	Acc = %	LPM =	Acc = %

3



Introduce the task to the student by saying:

"I'm going to say some words for you to write that I have made up. They are not real words but you can spell them from the sounds you hear.

Phonic knowledge

CONSONANT–CONSONANT–VOWEL–CONSONANT (CCVC)

Target	Pupil's Response Date:	Pupil's Response Date:	Pupil's Response Date:
dran			
gled			
spif			
prot			
grut			
trag			
fren			
skig			
blod			
plud			
	Time (s)	Time (s)	Time (s)
	Letters Correct	Letters Correct	Letters Correct
	Rate (lpm)	Rate (lpm)	Rate (lpm)
	Accuracy (%)	Accuracy (%)	Accuracy (%)

Observations:

Calculating letters per minute (lpm) and percentage accuracy:

Lpm = 60/time taken (in seconds) X 40

Accuracy % = 100/40 X the number of correct letters

14

Assessment & Interventions for students with difficulties mastering word reading & spelling

Accompanying Booklet for course running Jan/Feb 2017

This booklet has been specifically produced to complement structured training. In order to be useful it requires the additional information, explanation and practice incorporated in the training sessions. It is partial in terms of coverage of the content covered within the course and is not designed to be a 'stand alone' resource.

Overview

What a SENCo should have in terms of knowledge, skills and tools

Knowledge:

- How reading & writing work – the components and how they link together
- What interventions are available and what the evidence is for them
- Which classroom strategies can improve participation and access

Skills:

- Ability to conduct a good quality assessment
- Ability to design, implement and monitor and supervise an intervention
- Ability to organise the time necessary for an intervention to be delivered and to engage with all participants

Tools:

- Standardised assessments to track rate of progress
- Detailed skills assessments to identify specific skills to be taught
- Equipment/materials to deliver any programme of intervention

The course is designed specifically with the needs of Special Educational Needs Coordinators (SENCOs) and literacy coordinators in mind. It covers the essential knowledge, skills and tools needed in order to teach essential word reading and word spelling skills and effectively support students whose development of these skills is delayed. Though other, broader aspects of literacy skills are covered briefly the course is primarily focused at the 'word' level. As the title suggests, the two key aspects of this particular course are assessment (what skills and/or knowledge are missing or weak and to what degree?), and intervention (how can we best support the student in mastering these missing or weak skills/knowledge?). However, in order to cover these two aspects, it is important to build an understanding of the components of literacy skills and the way in which they interact to produce effective reading and writing.

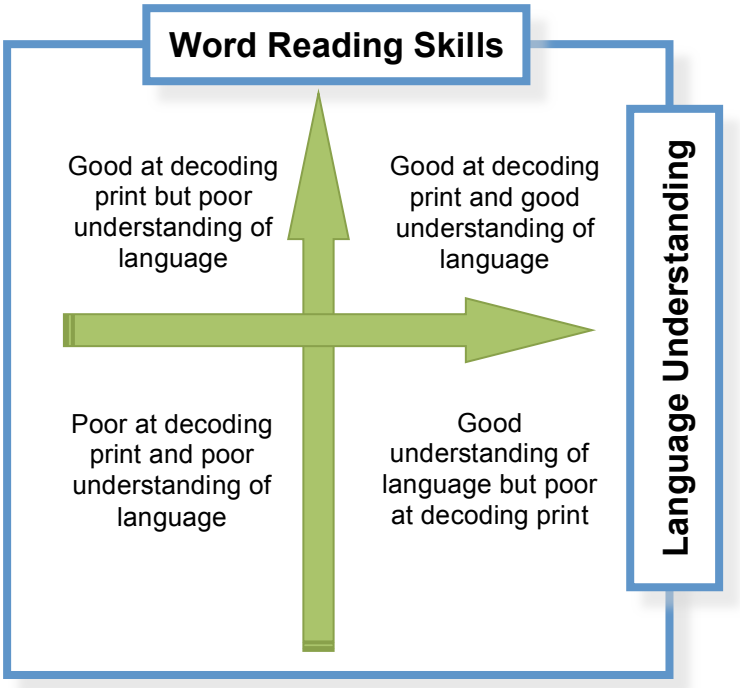
The Models

The 'Simple' Models of Reading & Writing

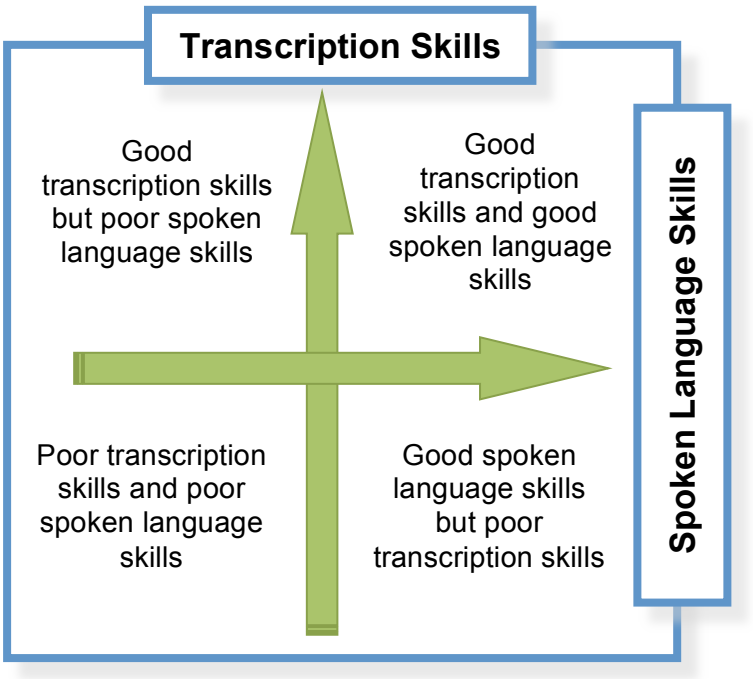
The 'Simple Model of Reading' (first proposed by Gough & Tunmer in 1986) is now widely accepted as an accurate description of the key components which combine to produce 'reading' (efficient word decoding allied with language comprehension). It is not sufficient to be strong in one or the other of the components. For functional reading to occur both components are necessary. For example, it is likely that you can confidently and accurately read the following sentence:

'The toper torrefied the toque'. (we'll be coming back to this sentence when we cover reading comprehension).

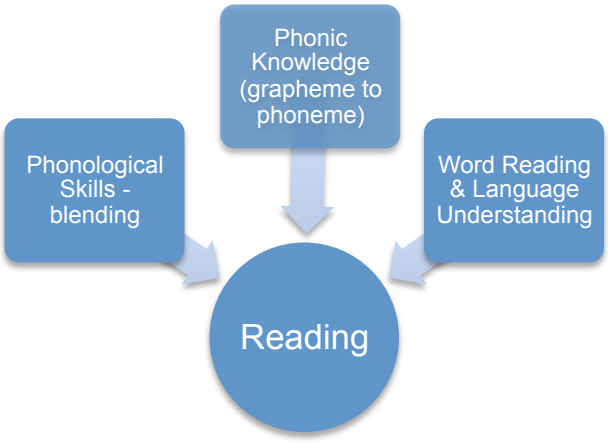
However, it is unlikely that you can understand it! Similarly, though pushing you towards your limit in terms of mechanical decoding skills, it is likely that you can master the accurate reading of the word 'floccinaucinihilipilification', though for most people it would carry no meaning (save for inveterate sesquipedalianists such as myself!). For fluent (accurate and fast) word decoding & recognition skills to lead to useful reading, they need to be combined with language comprehension. Typically in your role as SENCo the students you will be supporting will predominantly fall within the lower quadrants in the model (below). However, there will be a smaller number of students whose reading skills fall into the upper left quadrant. These student's needs are sometimes missed in the primary phase of their education in particular because of the strength of their word reading skills.

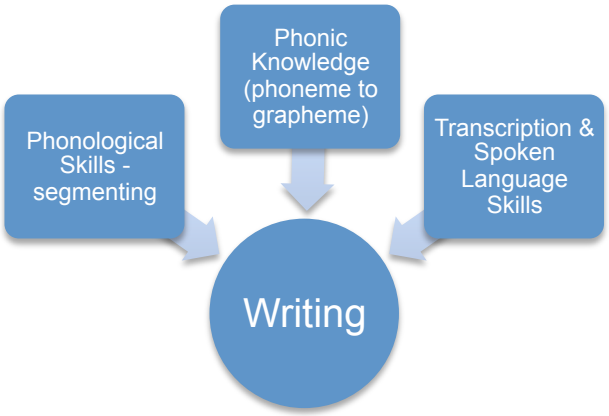


Though writing is thought to be a more complex skill than reading, a similar model to that for reading could be proposed to represent the key factors contributing to the development of effective writing skills. The proposed 'Simple Model of Writing' would mirror that of reading in that for meaningful writing to occur both transcription skills (fluent handwriting and word spelling) and expressive language skills are necessary. As with the previous model, the majority of students you will be supporting fall within the bottom two quadrants, with a smaller number falling within the upper left quadrant. These students tend to be under-identified within the primary phase because of strong transcription skills and knowledge of basic rules of grammar and syntax.



To summarise, effective reading and writing result from the interaction of a number of key components. If a student has a significant weakness one or more of these components, then they will have difficulties in mastering age appropriate reading and/or writing skills. Fluency (in respect to both word reading and word writing) and handwriting (or other transcription skills specific to the production of writing/text) are also key elements to consider. Understanding these models is crucial for effective assessment and intervention.





Assessing Literacy Skills

Standardised Tests

Straightforward norm referenced tests, or standardised tests, such as graded word reading or spelling tests, are designed to measure a student's performance in relation to the expected performance for his/her age. They tell you how well a student is doing in comparison to the typically expected levels for his/her age. These tests can be useful for tracking a student's rate of progress in response to an intervention, or as a filtering mechanism in making a decision as to whether a more detailed assessment would be a productive use of time. Standardised reading tests in particular vary a great deal in terms of the depth of assessment. This can range from simple word lists, to sentence reading, to reading passages of text. The elements of reading sampled range from straightforward word reading accuracy, through to reading rate, reading fluency and reading comprehension. Standardised spelling tests tend to be of the simple graded word type. Standardised tests of handwriting proficiency such as the DASH could be used to measure this important aspect of writing. The type of test you choose to use will depend on the type of information you want. We will be examining a number of reading, spelling and handwriting tests within the training sessions.

Criterion referenced tests

These tests tell you what students are able to do. It takes time to administer tests like these. If a reader or writer is scoring within or above the average range on a standardised test, it would be important to consider whether administering a more detailed criterion referenced test is a productive use of time.

At the 'word' level, good quality criterion referenced tests should assess a student's level of mastery of the key skills needed for the development of fluent word reading and word spelling. These skills include:

- **Phonological skills**
- **Phonic knowledge**
- **Fluency**
- **Phonological skills:** These are the skills needed to blend, identify, manipulate and chunk sounds. These skills can be assessed without any reference to printed material. The rationale is that, in reading, the sounds represented by print are blended together to make the word. To read well one needs to not only know what sounds different letters or letter combinations represent, but be able to blend the sounds together to make the word. Conversely, in writing, one hears the sounds in a spoken word and then writes down the letters representing these sounds.

Assessing a student's phonological skills: their ability to manipulate the units of sound in a word such as phonemes & syllables.

The smallest unit of sound in a word is called a phoneme. Phonemic awareness is knowing that every spoken word consists of a sequence of phonemes. However, the written form of English is not phonologically transparent in that some letters can represent more than one phoneme and some phonemes can be represented in different ways. For example, when reading the 'ch' sound one needs to be able to manipulate phonemes to try different possibilities as in 'chair' versus 'chord', not forgetting 'chauffeur' and 'choir'. This phoneme manipulation skill can be assessed at a basic level by finding out whether a student can delete a single phoneme and state what is left. As one becomes more fluent and practised at reading and spelling, the range of words to which one becomes exposed increases, as do their length and complexity. Chunking longer words into syllables provides one way of managing this complexity and this is assessed by a syllable deletion task which measures how skilled students are at separating out syllable chunks.

Phonic knowledge: At the first stage it involves knowing the sounds associated with single letters and simple letter combinations within phonically simple words (e.g. pig, chat, fish). At a more progressive stage, it involves knowledge of the advanced code where the sounds represented by letters and letter combinations can vary (e.g. thought, through, though). In reading, the context gives some additional help in identifying the correct sound association. However, in spelling there

Assessing a student's phonic knowledge; their knowledge of the code by which the 44 (or so) sounds in English are represented in print.

is a greater degree of unpredictability in terms of the letter(s) which could legitimately represent a sound (e.g. the sound 'ou', in 'thought' could be represented by 'aw' as in 'saw', 'or' as in 'sort', 'au' as in 'aught' and so on). One common example used to illustrate this is the writing of 'ghoti' as a phonically accurate representation of the word fish!*

*(the sounding of 'gh' as 'f' as in the word 'enough'; the sounding of 'o' as 'i' as in the word 'women'; and the sounding of 'ti' as 'sh' as in the word 'station').

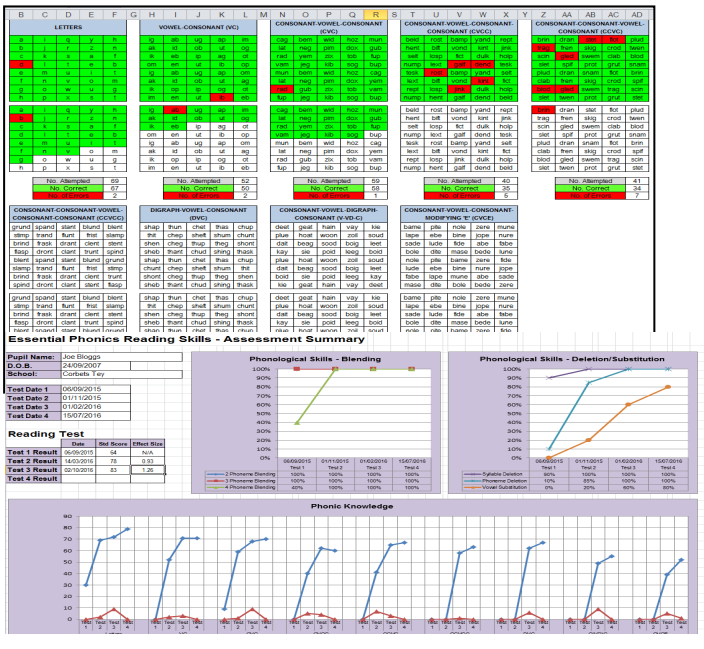
Fluency: Phonological skills and phonic knowledge combine to produce effective word reading and word spelling. However, if a student cannot apply his or her phonological skills and phonic knowledge with a degree of fluency (appropriate speed and accuracy), then effective reading and writing will be very difficult to master. Without a high degree of automaticity/fluency in the 'mechanics' of word reading and word writing, a student's capacity to understand what is read or to construct appropriately sophisticated written compositions can be severely compromised. This is due to the demands placed on working memory.

In addition to gaining measures of a student's levels of mastery in key aspects of word reading and/or spelling, a criterion referenced assessment should:

Identify the key elements or skills for a tailored programme to improve a student's literacy skills.

This provides the **content** of any programme of intervention. The skills or items of knowledge which need to be effectively taught if the student is to make progress with word reading and word spelling.

We will be exploring two criterion-referenced tests (the Essential Reading Skills Analysis – ERSA, and the Essential Spelling Skills Analysis – ESSA) during the training sessions. Participants are provided with a set of test materials and recording and reporting software.

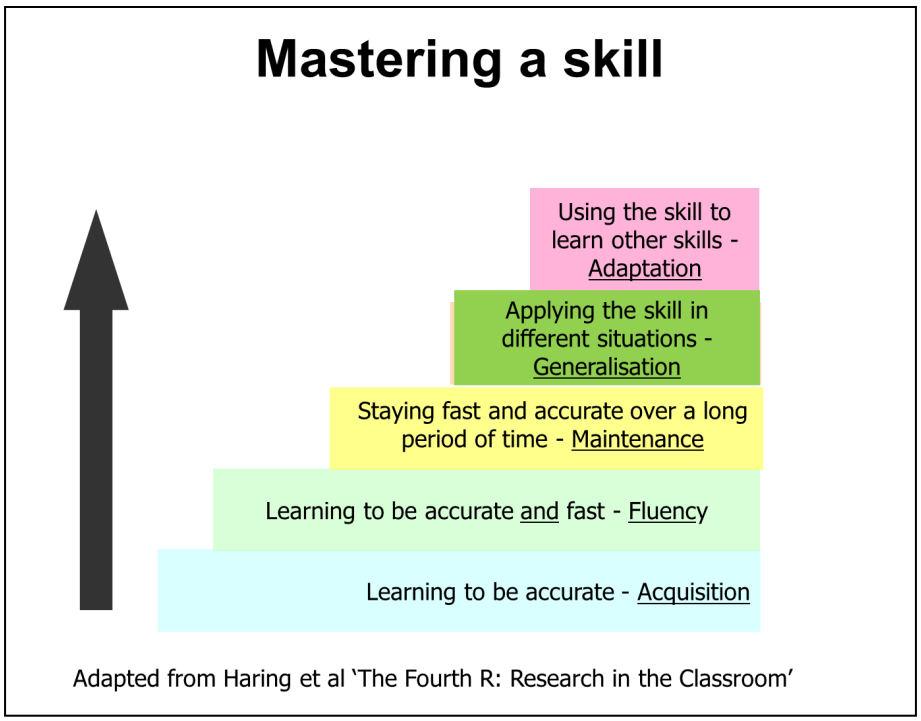


However, whilst necessary, accurately identifying **'what'** needs to be taught is generally not sufficient in itself to ensure progress. A crucial next step is to identify **how** best to teach these skills or this knowledge. This is sometimes referred to as the 'pedagogy' or method of instruction/teaching.

Effective Interventions

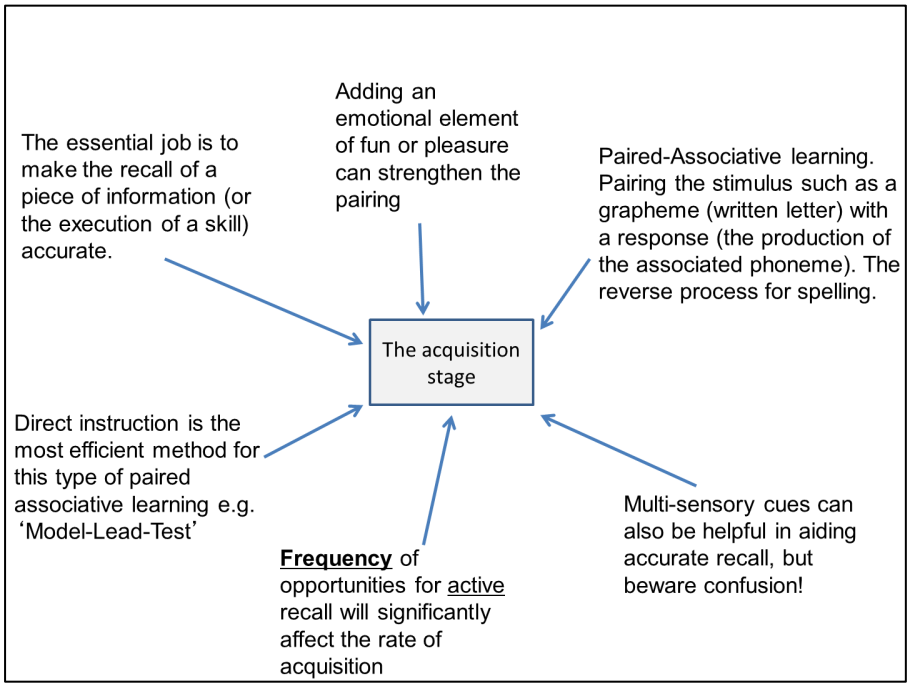
There are a number of intervention programmes targeting the development of key literacy skills for students who are delayed in the mastery of these skills. We'll consider the evidence base for such programmes later in the training. However, for any programme to be effective it will need to address all of the stages in the skills mastery hierarchy (see below). This hierarchy can be applied to the mastery of any skill. For our purposes, we're going to apply it to the mastery of essential word reading and spelling skills. Though organized as a hierarchy, elements within the structure can be targeted simultaneously when teaching a skill, which is why I refer to it as the 'Skills Mastery Matrix' during the training. However, for ease of communication, each stage will be described separately in this booklet.

*There are two, non-specific instructional elements which you will see repeated within the guidance for effective teaching at each stage. The instructional power of these two elements (pleasure/enjoyment and active practice/engagement) is consistently reflected in the research on effective learning.



The Acquisition Stage

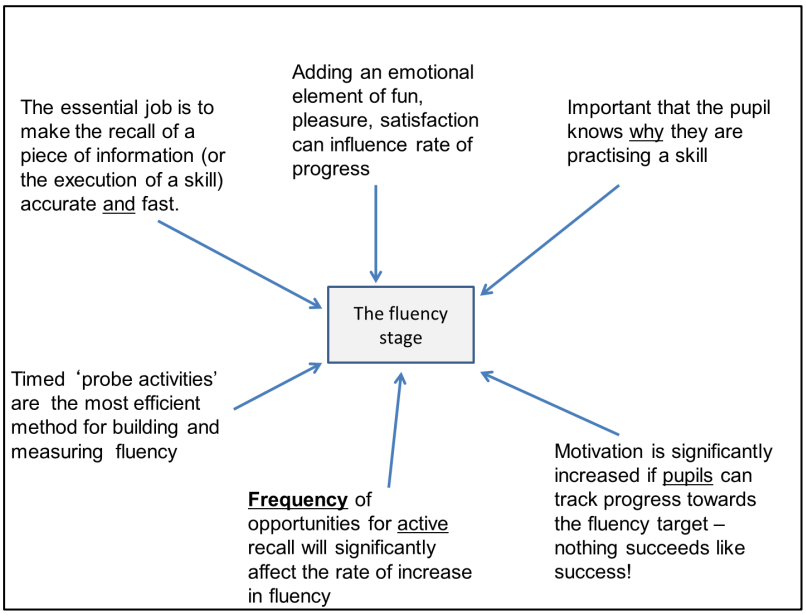
The accurate and consistent recall of a piece of knowledge or deployment of a skill is an essential first step towards mastery of that skill. Unfortunately, many instructional approaches interpret this level of performance as evidence that the targeted skill or piece of knowledge has been 'learnt'. With the vast majority of students this would not be problematic. Students would naturally progress from this stage to quickly and easily deploying the skill or using the item of knowledge across a range of appropriate situations. This would occur with very little direct teaching required, simply through exposure to a range of appropriate situations within which the skill or knowledge is required. However, this is rarely the case for the students that SENCO's typically support. The more common pattern is for the students to initially have great difficulty in acquiring accuracy, and even where it is acquired, for it to fade over time when the item/skill is no longer being directly taught (the 'learn and lose' scenario). Staff will often assert in exasperated tones that "He/she had learnt that!" or will claim that the student has significant memory problems and cannot retain taught skills. In actual fact, the student had only temporarily acquired some accuracy in performing the skill or deploying the knowledge, leading to the impression of having 'learnt'. Within the training we'll consider some of the possible teaching approaches that will most effectively support a student at the acquisition stage. This will include exploring some of the IT based approaches that are rapidly being developed.



Using the same phrase used when discussing the simple models of reading and writing earlier, this element is necessary, but is not in itself sufficient. Where students have significant difficulties in mastering a particular skill then it is necessary to provide direct, targeted, teaching through the different elements of the hierarchy. Which leads us to…

The Fluency Stage

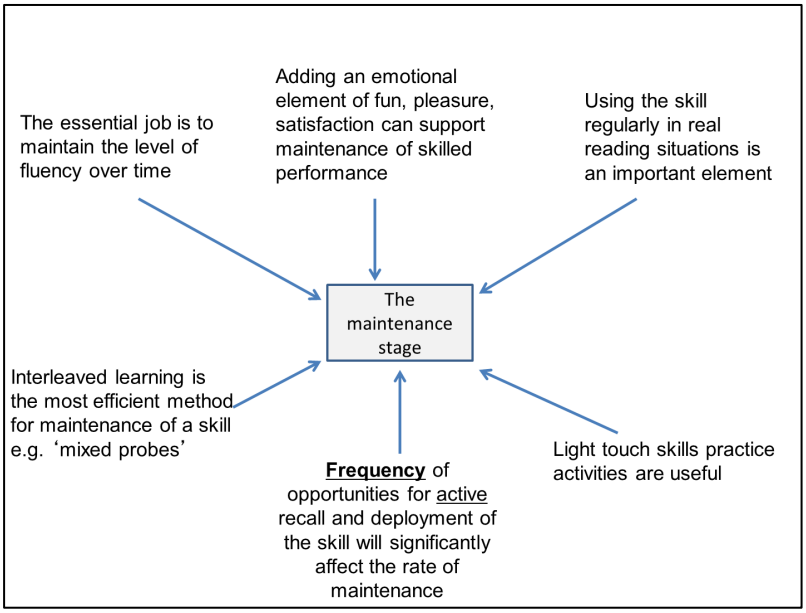
Fluency, which I'm going to define in this instance as 'the accurate and appropriately paced deployment of a skill or recall/use of an item of knowledge', is a crucial but very much overlooked aspect of effective learning. In the development of literacy skills in particular it is essential. The relatively effortless (fluent) use of word decoding and spelling skills allows precious working memory capacity to be deployed in accessing the more sophisticated aspects of



literacy skills such as composition and comprehension. If accuracy is at the cost of conscious effort and slow pace, these higher order skills cannot be effectively deployed. The importance of this element is reflected in the inclusion of fluency measures in both the ERSA & ESSA assessment materials. We will be exploring potential instructional approaches targeting this stage of learning and considering the use of Precision Teaching/Monitoring techniques.

The Maintenance Stage

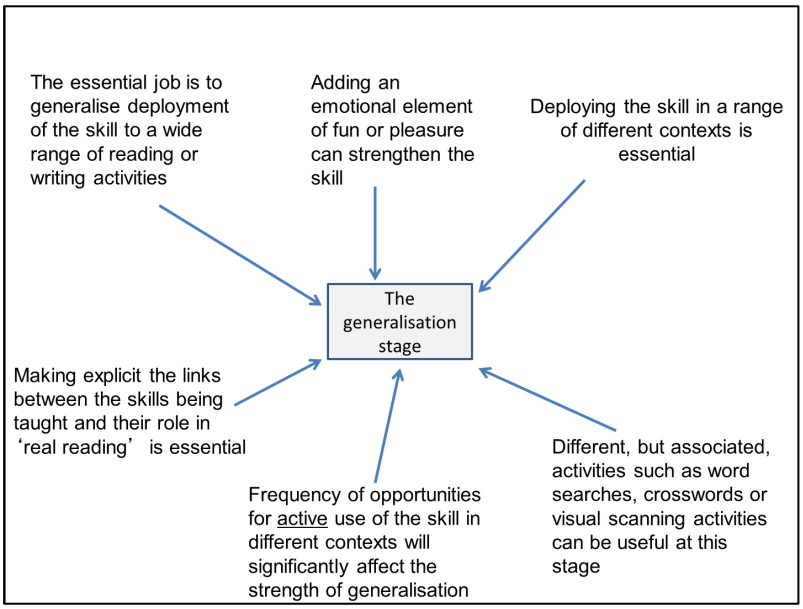
We all to some extent lose a degree of skilfulness or speed of recall with lack of use over time. However, the degree of loss is usually moderate and is quickly recovered with a small amount of re-exposure. This is because, when first learnt, the skill was probably quite quickly learnt to a level of mastery. With some students the maintenance of a level of skill whilst progressing towards mastery needs to be systematically incorporated within a programme of support. During the training we'll be exploring 'interleaved learning' (particularly the 80/20 split) in some depth.



The Generalisation Stage

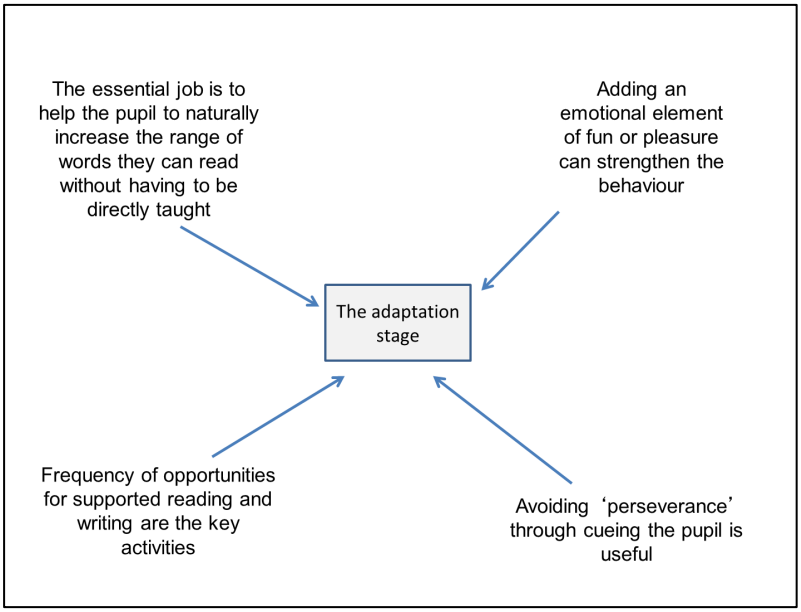
Deploying a skill or being able to recall an item of knowledge in a specific context with speed and accuracy has limited usefulness unless the student can apply that performance to a range of meaningful contexts. As with other aspects of the development of a skill, adults sometimes make assumptions about the capacity of a student to spontaneously deploy a skill or recall items of knowledge in the contexts in which they are required. This is not always the case. In addition, in their teaching, adults sometimes confuse generalisation activities with acquisition activities. This can lead to a slowing of progress. The most useful generalisation activities are those that most closely match the real

world contexts in which the skill/knowledge is to be deployed. We'll be exploring several generalisation activities/teaching techniques.



The Adaptation Stage

This stage is occasionally directly taught, but is more often 'facilitated'. We'll discuss it in terms of supported exposure to sufficient breadth and depth of reading
material. The same would be true for writing. The 'teaching' strategy at this stage is more akin to a 'coaching' approach.



Pulling things together:

So far we've covered:

- Using standardised tests to identify the 'scale' of any delay and to use as possible measures of progress in response to interventions
- Using criterion based tests to identify individual student profiles of literacy skills and to identify the content of an intervention programme
- Using the 'Skills Mastery Matrix' to inform the instructional elements of an intervention

We're now going on to address additional issues/questions of relevance to the role of the SENCo in supporting students with literacy difficulties.

Measuring Progress

How can we measure progress in response to an intervention, and what rate of progress reflects an effective versus ineffective intervention?

Standard Scores

The use of tests with standard scores allows for a straightforward measure of progress. There is a simple formula used to calculate 'effect size' which then allows for a judgement on the usefulness of an intervention. The formula is:

$$\frac{\text{Standard score after the intervention – } \textbf{minus} \text{ – Standard score before the intervention}}{\text{Divided by 15 (or whatever is the standard deviation for a particular test)}}$$

The resultant number, ranging from 0 to 1+ is graded on a scale of 0 – 0.2 (negligible impact); 0.2 – 0.4 (moderate impact); 0.4 – 0.6 (useful impact); 0.6 – 0.8 (good impact); >0.8 (very strong impact)

Age Equivalent Scores

Though less reliable than standard scores, age equivalent scores also allow for a measure of progress. There is a simple formula used to calculate 'ratio gain' which then allows for a judgement on the usefulness of an intervention. The formula (with all units expressed in months e.g. 10 years 4 months = 124 months) is:

Age equivalent score after the intervention – **minus** – Age equivalent score before the intervention

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Divided by number of months elapsed between assessment 1 and assessment 2

The resultant number expresses the proportional increase in rate of progress whilst on the intervention (e.g. an age equivalent increase of 10 months following an intervention lasting 5 months would give a score of 2, representing a doubling of the rate of progress that would have been expected in regard to the increase in the student's age). A doubling of the rate of progress is considered to be a minimum expected impact based on evidence form a number of intervention programmes. However, as regards interventions for students with longer - term substantial difficulties in mastering the mechanics of word reading and spelling outcomes from interventions can be less powerful (see Brooks 2016, chapter 7)

Other useful measures of progress that might be considered more 'ecologically valid' (closer to natural/everyday uses of literacy skills) can include progression through book bands/levels or samples of written compositions. Quite powerful for both student and staff/parents, is to record the reading of a page from a sample book as a 'before' sample of reading, put the book away and repeat the reading task following the intervention (again, recording the performance). This often highlights, in a very potent way, the degree of progress the student has made (which is not always picked up in terms of increases in standard scores on a formal test). The same approach could be used with writing skills (keeping the before and after writing prompt the same) to give clear examples of 'real world' progress. Use could also be made of recent Writing Assessment Measures, designed to link closely with the National Curriculum expectations (e.g. Dunsmuir, et al, 2015; Dockrell et al, 2012 – details provided during the course)

If you are using criterion referenced tests/assessments to inform an intervention, then progression through the elements of the programme can be used. For example, observing that before the intervention, the student was able to read from a sheet of 3-letter phonically regular words at a rate of 25 per minute with an error rate of 20%. Then following the intervention, observing that the student can now read words of this structure at a rate of 60 per minute with an error rate of less than 5%. The Excel programme provided with the ERSA assessment package will provide graphical illustration of progress. However, a

crucial supplement to this information would be an assessment of whether the student is applying this improved skill level within his/her reading behaviour when reading typical materials and is reading for meaning.

The same principles apply to criterion based measures of improvements in word spelling skills (e.g. before the intervention the student was able to spell a varied range (20) of 3-letter phonically regular words with an accuracy rate of 40% and following the intervention the student was then able to complete the same form of task with an accuracy rate of 80%). It's a little trickier to set fluency targets for word spelling, but obviously the speed/ease at which a student can accurately write a word is an important indicator of how well learnt it is so you would be looking for functionally appropriate speed. A 'rule of thumb' approach to this would be to complete the task with a student of average ability in this domain of the same age/stage and look for a performance within 10% or so of this baseline. This is a bit loose and obviously needs to be applied with some common sense (particularly where handwriting skills are potentially an issue), but it would serve to draw attention to the need for appropriate speed. Within the level 1 ESSA assessment there are simple measures of fluency that can be used for this purpose. As with the word reading, you would look for transfer of the new skill to a range of natural writing activities and is producing meaningful written composition.

How about reading comprehension?

The term 'reading comprehension' is a bit of a misnomer. More accurately, it should be termed 'comprehension of language via the reading of text' versus 'comprehension of language via listening to spoken words' (often referred to as listening comprehension or receptive language). Difficulties with 'reading comprehension' tend to stem from three distinct factors (though a student's comprehension of text could be affected by more than one element):

- General difficulties with understanding spoken language, or specific difficulties with particular elements of language such as abstract or inferential language.

- Difficulties with efficient word decoding/recognition. This would compromise comprehension even where general language comprehension was intact. Some students make sense of passages of text despite struggling with accurate decoding. However, this is at the cost of time and cognitive effort.

- Patterns of learnt behaviour related to reading where the student understands the reading task as accurate and speedy recital of text, rather than the interrogation of the text for the purpose of deriving understanding.

Effective interventions for improving reading comprehension would address the particular barriers identified as affecting a student's progress in this area. During the training we'll be looking at the York Reading for Meaning Project, Reciprocal

Reading, and Cued Comprehension and I'll be signposting you to other possible interventions.

Levels of Reading Comprehension

'The toper torrefied the toque'
(The drunkard singed his hat)

Literal – the easiest ones are verbatim questions like 'What did the toper torrefy?' Note that you, like your students, can answer such questions confidently and correctly without having the slightest idea of what the sentence means! Many of the published schemes or books use this type of question quite frequently.

Reorganisation – if our toper went on to set fire to the rest of his clothing during the story, you could ask the students to name three things that he destroyed as an example of a 'reorganisation' question. Here they would have to scan the passage to pick out and put together the required information, rather than simply copy it out verbatim.

Inferential Comprehension – involves 'going beyond the information given' by asking, say, how they think the hero felt the next morning as an example of a 'cause-effect relationship' or prediction.

Evaluation – asks the reader to apply not only his or her knowledge, but also his/her judgement. For example, 'Do you think anybody would ever really behave like this?'

Appreciative – the questions are slightly different in that they ask the reader to respond to the text as a piece of writing. For example, 'What do you think about the writer's choice of words?'

Barrat's Taxonomy – adapted from the MacMillan TIPS Pack

How about written composition skills?

To some extent this mirrors reading comprehension (though with some important differences which we'll discuss in detail in the course). However, in a similar vein to the causes of difficulties with reading comprehension, problems in this area tend to fall into three broad types (though a student's written composition skills could be affected by more than one element):

- Generalised difficulties with expressive language, or specific difficulties with elements of language such as abstract or inferential language, or generating/expressing language in all or some of the styles (e.g. instructional language, narrative language, vocabulary range/fluency etc.).

- Difficulties with efficient word spelling fluency and/or handwriting. This would compromise composition skills even where general language skills were intact. Occasionally students can produce good quality passages of text despite struggling with transcription skills. However, this is at the cost of time and cognitive effort.

- Patterns of learnt behaviour related to writing where the student understands the writing task as accurate spelling and grammatical construction, rather than the more flexible/expansive generation of linguistic content.

Effective interventions for improving written composition skills would address the particular barriers identified for a student. During the training we'll be looking at a number of possible assessment strategies linked to the proposed 'Simple Model of Writing' and linked interventions, particularly those focused on the development of fluent spelling skills along with vocabulary and other aspects of spoken language instruction.

The use of IT/Apps

We'll be covering the use of Apps and other IT/computer based programmes during the course and linking them to the stages of the skills mastery matrix. We'll also consider the evidence for effectiveness of IT based interventions, which, at the time of writing this course booklet is somewhat lacking. The number of relevant apps being produced is increasing quickly and it's difficult to keep abreast of new developments. However, I will demonstrate or describe a small number of apps and IT programmes which I feel might be useful for different purposes and different stages of development/ages.

Transferring training into policy and practice

As an outcome of the training it might be useful to review or redesign the school's policy on addressing literacy and linked language skills development across the whole school population, and also in relation to students whose progress is of concern. During the final workshop we'll explore this issue, along with other factors related to implementing evidence-based interventions within the specific settings of the participants. This includes staff training, maintaining fidelity, avoiding 'wash out' effects, embedding processes within everyday teaching practice and so on.

Useful sources of information

Specific references will be provided during the course. However, the following general resources are very useful for SENCO's when exploring approaches to addressing literacy difficulties:

1. Rose, J. (2009). *Identifying and teaching young children with dyslexia and literacy difficulties*. London: DCSF Publications.

2. Brooks, G. (2016). *What works for children and young people with literacy difficulties? The effectiveness of intervention schemes. (Fifth Edition)* The Dyslexia/SpLD Trust

3. Duff, F.J. & Clarke, P.J. (2011). 'Practitioner Review: Reading disorders: What are the effective interventions and how should they be implemented and evaluated?' *Journal of Child Psychology & Psychiatry,* 52, 1, 3-12.

4. What Works Clearinghouse: https://ies.ed.gov/ncee/WWC/

Notes:

The contents and structure of the literacy skills assessment and programme planning materials,(the Essential Reading Skills Analysis – ERSA, and the Essential Spelling Skills Analysis - ESSA) were developed by John Price. This specific booklet is designed to be one element of an integrated literacy skills assessment suite and training package rather than a stand- alone resource. The accompanying manuals and course booklets, along with the training materials provided during the course give essential information to guide practitioners on the administration of the assessment tools and use of the information arising from them. Though no restrictions on use are being made, when using the resource, acknowledgement to its origin should be made. Enquiries regarding the materials should be addressed to the author at:

johnnyhooley@googlemail.com